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THE

Dr J L Schoch

OBSTETRIC CATECHISM;

CONTAINING

TWO THOUSAND THREE HUNDRED AND FORTY-SEVEN

QUESTIONS AND ANSWERS

ON

OBSTETRICS PROPER

BY JOSEPH WARRINGTON, M. D.

Dr J L Schoch

One Hundred and Fifty Illustrations.

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INTRODUCTORY ADDRESS

TO MY OWN OBSTETRIC PUPILS, AND TO STUDENTS OF MEDICINE GENERALLY;

GENTLEMEN: I dedicate this little work to you.

Were I in the midst of you, as I present each a copy, I would address you principally in the following words:

I have designed this little book, as an aid to you in the prosecution of your studies in a very important branch of the science and art of medicine, or as an occasional remembrancer for you, when you are engaged in the practice of your profession, remote from any experienced living counsellor.

It is written for you, as a sort of vade mecum, or reviver of your knowledge in this matter, and in this respect as far as it goes, I am sure it will be useful to you; but remember, it is not your *text* book: it is your *test* book: it is your catechist or inquisitor, not to tell you any thing new, but enable you to determine what you do, or what you do not already know.

Your knowledge of the great principles on which the important subject of obstetrics is founded, is to be derived from other sources; from well approved standard works: as those written by Velpeau, by Dewees, by Rigby, by Ramsbotham, by Churchill, by Meigs, Lee, &c.; and to understand either, or all of them well, you must give faithful attention to the study of the anatomy of the female pelvis, and all those organs which are concerned in the process of conception, gestation, parturition and lactation. These you must study by personal application of your scalpel, under the direction of a skilful anatomical teacher.

Then follow closely upon the demonstrations of your Obstetric Professor through his whole course—examine his various pictorial illustrations, anatomical and physiological

specimens, and give earnest heed to his demonstrations of the mechanism of the various kinds of labor upon the mannikin,—nay, more than this, embrace every possible opportunity to exercise yourselves, either alone with a demonstrator, or in small classes, till you become familiar with every variety of presentation, position, mode of correcting those which are deviated—the proper mode of performing version—the use of obstetric instruments, &c. This done, my little book will be of service to you, and I shall be gratified, if, when you use it as a catechism of your knowledge in midwifery, you shall have been so well instructed by the method I have just pointed out, that you may detect any error which may exist, either from want of critical knowledge on my own part, or which may have been inadvertently committed, in the haste I have made to supply it to those who have demanded it of me for your sakes, while, as some of you know, I have been closely occupied, not only in the ordinary duties of private practice, but in teaching the science and exercising the art of obstetrics in connexion with the Philadelphia Dispensary, Lying-in-Charity, and Nurse Society, since the year 1837, to successive classes of young men, in four courses per annum, of at least sixty lessons each; have assisted in the training of more than three hundred and seventy advanced students or recent graduates in medicine; stationed them by the bedsides of more than two thousand parturient women; superintended their conduct there; relieved them in their embarrassments and aided them in their difficulties; examined their clinical histories; superintended the practical education of nearly one hundred nurses; have been engaged with lady visitors of the Institution in deciding the fitness of these candidates to enter upon their responsible duties of taking care of parturient and puerperal females under the direction of their physicians, and therefore, little time has been allowed me for authorship.

I have not followed the systematic arrangement adopted by any obstetric writer in preparing this little offering, and I have not calculated it for the meridian of any particular school.

The grand principles of this science and art are the same every where; and from the numerous institutions for medical teaching, which have sprung up around the parent

stalk throughout the different sections of our wide-spread country, we may hope for a powerful and honorable competition for excellence in the mode of illustrating these principles, and the extension of facilities for properly qualifying the candidates to enter usefully upon the exercise of one of the most important functions which one human being can exert towards another.

I have written out the matter now presented to you during the *minutes*, for I have not *hours* of leisure; and, therefore, lay no claim to great precision in the language I have used. The questions are to be taken, as though they were put to you extemporaneously and familiarly, and the answers are mostly made out as though you were unexpectedly called upon to give them, and in this I consider consists some good quality in the little essay now put into your hands.

It will be perceived that I have said much, or rather, allowed others to say much respecting the various kinds of forceps which they have purposed for the benefit of the child in cases in which the mother is found incompetent to give it birth in season to secure its continued existence, and have inquired somewhat minutely in reference to the character of instruments which have been contrived to complete the delivery for the mother's sake more especially. I have done this, because, while I continue to believe that instruments of any kind are comparatively rarely needed in cases of well conducted obstetricy, it is exceedingly important that no man should be allowed to enter upon this department of the profession, in any place whatever without having been first not only shown, *but thoroughly tested in the mode of use* of the instruments which unfortunately may be needed for the full accomplishment of all the painful duties which may devolve upon him.

I have thoughtfully refrained from alluding to the subject of anæsthæsia in obstetric practice, having not much to say from my own experience in its use, and after stating my strong objection to making women, even transiently, *drunk*, whenever any substitute may be successfully available, I have still preferred not to attempt in the text to prejudice the mind of the student against any preceptorial or professorial biases he may have received.

I have introduced into this book the sentiments of a few

of the numerous cultivators of obstetric medicine now living—and I have apparently made you draw some of your responses from a few of the many excellent volumes which have been written on obstetrics. I know full well, young gentlemen, that during the *hurried* pupilage, which unfortunately is the custom of the present age, you cannot have read and reflected upon all that such industrious men could tell you, or have written for you; but should not the almost unanimous sentiment of the great American medical association influence you and your successors to protract the period of your studentship, I pray that you may, even after having acquired the degree of the Doctorate in the schools of your choice, before you attempt to share largely in those weighty responsibilities which are experienced by some of your older brethren, embrace every possible opportunity to make yourselves acquainted with the results of their carefully made observations, either by conversation or correspondence with those who are now busy on the stage of professional life, or studying the works of those who have fulfilled their destiny here and have gone hence to receive their retribution, leaving to us a rich legacy in their recorded sentiments and experience.

Gentlemen—in the course of a quarter of a century devoted to the practice of medicine, and especially to that of obstetrics, I have many times fully realized the truth of the assertion of the venerable Dr. John W. Francis of New York, uttered more than thirty years ago, and which, on the present occasion, I transmit to you.

"Another circumstance which fortifies the claims of this branch of study, arises from the absolute certainty, that every one engaged in the practice of medicine, is liable to be called upon in obstetrical cases. Although it is permitted, that the practice of physic and surgery be exercised by the same individual, it is not unusual for persons to select that particular branch to which their genius or feelings are most partial. But, it is proper for us to bear in mind, that whether emulous of medical or surgical reputation, in the course of our duties, calls in midwifery happen to all. To gentlemen who enter upon the practice of medicine in this country, a knowledge of the obstetric art is indispensable. Cases of labor occur in every well regulated family, and calls of this nature can neither be parried or delayed.

Our wide-spread population is little favorable to that division of the profession which elsewhere obtains, and what is regulated by common consent, is not to be controlled by individual feeling.

"To studious and ingenuous youth, our science presents attractions in no wise inferior to any other branch of knowledge. The whole range of physiology solicits his diligence, and will amply reward his toil. Talents of the highest order have lately entered into this field of investigation, and the most sanguine anticipations have been realized.

"But, it is not the charms of philosophy, nor an honest ambition of fame, which, in this case, are alone to be consulted. Considerations of prudence, and the claims of humanity, alike urge us to the acquisition of this part of the profession. In no situation in which the physician can be placed, does he encounter greater responsibility than in the practice of midwifery. The lives, both of the mother and child, are dependent on his skill, and amid the most trying and perplexing difficulties, his character is committed to the tribunal of censorious and often incompetent judges. Nothing but conscious ability can arm his resolution, or protect his feelings from insult. Of that knowledge which lends its aid to art, it is not only requisite that it be possessed, but that it be ready and forthcoming; and on the practice of midwifery above all others, it is incumbent, that his knowledge be present, and at command. No where is promptitude and decision more required; in no instance is the man of science more distinguishable from the mere pretentender; in no situation is the conduct of the physician more the object of present attention, or of subsequent criticism. In the Lying-in-chamber no opportunity is afforded for qualification or deliberation. The case demands immediate assistance, and it is vain to temporise. Vacillation and delay, always dangerous, may here prove fatal. The student's mind must be thoroughly prepared, else the imputation of ignorance will attend his hesitation and confusion. Firmness and decision, founded upon accurate and precise knowledge, will alone secure to him present confidence and future approbation."

I have addressed you numerous—2347—interrogatories;

yet I have omitted many things—but should I discover that you profit well by what I have already done, I shall aim, time permitting, to catechise you at some future period upon the whole subject of obstetric medicine, which I consider includes not only practical midwifery, but obstetrics proper, and the diseases of puerperal and nursing women, and young children.

Very respectfully yours,

JOSEPH WARRINGTON.

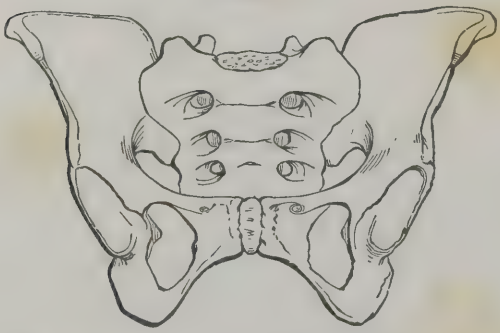
No. 229 *Vine Street, Franklin Square,*
Philadelphia, Jan. 1, 1858.

OBSTETRIC CATECHISM.

THE FEMALE PELVIS.

WHAT part of the osseous system of the female, is entitled to the greatest consideration of the practical accoucheur? That portion called the pelvis.

Fig. 1.



Where is the pelvis situated? At the lower extremity of the trunk, between the last lumbar vertebra and the upper portion of the ossa femora.

Of how many bones is the adult pelvis constituted? Four.

What are they? One sacrum, one coccyx, and two ossa innominata.

Where is the sacrum situated? Between the last lumbar vertebra above, and the coccyx below, and between the ossa innominata behind.

What is the shape of the sacrum? Triangular or pyramidal—concave anteriorly and convex posteriorly.

Fig. 2.



How many articulating surfaces does it present? Four. Its base above, for connection with the lumbar vertebra; its apex below, for the coccyx, and one on the upper half of each side for the posterior portion of the ossa innominata.

What is found on the anterior surface of the sacrum? Four or five quadrangular facettes, with the same number of transverse lines, marking the point of fusion of the originally distinct bones; at the end of these transverse lines an equal number of foramina, for the passage of the anterior branches of the sacral nerves.

What muscles are attached to the outer edges of the sacrum, and between these holes? The pyramidal muscles.

What is attached to the sharp edges of the inferior half of the sacrum? The sacro-ischiatic ligaments.

What is the general appearance of the posterior portion of the sacrum? Convex, and very rough.

What do we find in the median line? Several spinous processes.

What is to be seen at the upper portion of the posterior face? Articulating surfaces for the last lumbar vertebra.

What exists at the lower portion? A triangular notch, in which terminates the spinal canal.

What is to be seen on each side of the spinous processes of the sacrum? Four or more foramina for the transmission of the posterior branches of the sacral nerves.

What is the object of the rough surfaces near the edges of the posterior face of the sacrum? To present points for the strong attachment of sacro-iliac and sacro-ischiatic ligaments.

What is the object of the broad oblique and somewhat rough surface, at the upper lateral portions of this bone? For articulation with the ilia or innominata.

What is the situation of the coccyx? At the inferior termination of the sacrum, with which it is articulated.

What is its shape? Triangular.

What projects upwards, or backwards, from its base? Two prolongations, resembling horns.

Fig. 3.



What is the shape of its apex? Tuberculated and rounded.

What is attached to its edges? The ischio-sacral, or short sacro-ischiatic ligament.

What muscles are inserted into its edges? The ischio-coccygeal muscles.

What muscle is attached to its point? The external sphincter ani muscle.

Of how many bones is the coccyx originally composed? Three or four.

What kind of articulation exists between the sacrum and coccyx? Gynglimoid, or hinge-like.

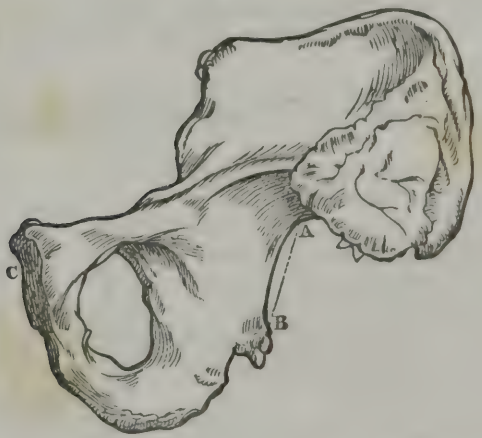
What is the direction of the motion of the coccyx upon the sacrum? Antero-posterior.

What is the extent of movement usually allowed to the apex of the coccyx? From half an inch to an inch.

Does the presence of the coccyx necessarily interfere with the process of labour? Only when it is partially or completely anchylosed.

What is the general shape of an os innominatum? It has a very irregular quadrangular shape, appearing as if strangulated at its middle, and twisted in two opposite directions.

Fig. 4.



How many surfaces has it? Two, one external and one internal.

What is the arrangement of its internal surface? It is divided into two nearly equal portions; the upper one, extensively excavated, is called the internal iliac fossa.

What occupies this broad expanse? The internal iliac muscle.

What do we find at the posterior margin of this upper portion? An articulating surface for junction with a portion of the sacrum.

What is the general shape of the inferior portion? Triangular.

What opening exists, about the centre of this lower portion? The obturator foramen, or subpubic opening.

What constitutes the point of division between the upper and lower portions of the ossa innominata? The linea-ilio-pectinea, running from the crest of the pubis, backwards towards the junction with the sacrum.

What is to be observed on the external or femoral surface of the os innominatum? First, the external iliac fossa; secondly, the acetabulum; thirdly, the subpubic, or obturator foramen, surrounded by the edges of the pubis, the ischium and the ischio-pubic ramus.

What occupies the external iliac fossa? The glutei muscles.

What is noticed on the upper edge of the os innominatum? The crest of the ilium.

What is attached to this crest? Muscles in its central portion, Poupart's ligament at the anterior, and the sacro-iliac ileo lumbar ligaments at the posterior extremity.

What is seen on its anterior edge? First, the antero-superior spine of the ilium, next a small semilunar notch, then the inferior anterior spine of the ilium, the groove for the psoas and iliacus muscles, then the ileo-pectineal eminence for the insertion of the psoas parvus muscle, then a triangular smooth surface, the spine of the pubis.

What is the arrangement of the posterior edge of this bone? First, the posterior spine of the ilium; a small irregular notch; the posterior inferior spine of the ilium; which articulates with the sacrum, then the

great ischiatic notch, and lastly the posterior portion of the tuberosity of the ischium.

Of how many distinct bones is the os innominatum originally composed? Three, the ilium above, the ischium directly below, the pubis in front of the last, and rather below the first.

At what points are these bones consolidated into *one* at a later period of life? In the acetabulum, or cotyloid cavity, at the pectineal eminence and at the middle of the ischiopubic ramus.

At about what period of life, does this consolidation take place? The age of puberty.

What are the principal articulations or symphyses of the pelvis? One for the two pubic bones to each other in front, and one for each ilium to the sacrum behind.

What is the mode of articulation of the symphysis pubes? The two articular surfaces are applied to each other, and sustained firmly in that position, by strong ligamentous fibres, before and behind. Underneath, the fibrous arrangement is so abundant, as to give to it the character and name of sub-pubic ligament.

Is the symphysis pubes of the adult female susceptible of spontaneous separation, or of having one extremity moved upon the other? There are strong reasons for believing that no perceptible degree of motion can be effected in a healthy condition of the parts.

What is the character of the posterior or sacro-iliac symphysis? The sacrum is placed like an inverted key-stone at the top of an arch, between the two iliac bones; strong bands of ligamentous fibres extend across from the sacrum to the ilium on each side, and thus a strong fibro cartilaginous symphysis is effected.

Is there a bursa, or synovial sac, found in either of these symphyses? In the symphysis of the pubes, there is to be seen an *approximation* to a bursa; it is however far from complete. In each of the sacro-iliac

junctions there are found some small points of condensed fatty matter, but no regular bursa.

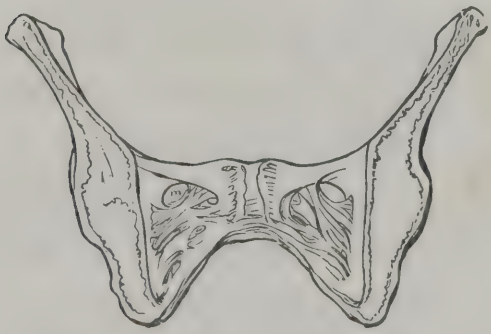
Does the pelvis derive support from any other points than those at which the bones are articulated? It is decidedly fortified by the addition of the ileo-lumbar ligaments—sacro-iliac and sacro-ischiatic ligaments.

Where is Poupart's ligament situated? It commences at the anterior superior spinous process of the ilium, and extends to the crest of the pubis, crossing to a small extent beyond the symphysis.

Where is the obturator membrane found? Filling up nearly the whole of the obturator foramen, admitting merely of space sufficient to allow the transmission of small vessels, nerves and muscles.

If we divide the pelvis into two equal parts, by a section through the acetabula, what will be found in the anterior portion? The bodies and rami of the pubes, the arch of the pubes, the rami of the ischia, and the obturator foramina.

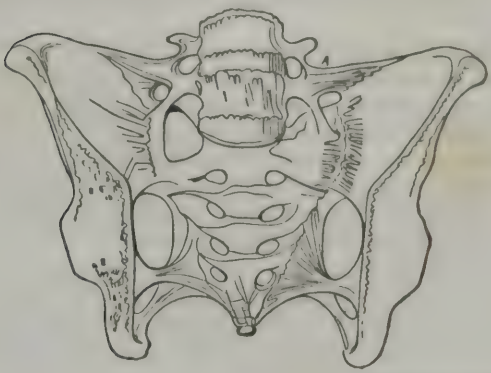
Fig. 5.



What will be found in the posterior half? The sacrum and coccyx, the bodies of the ischia and ilia, sacro-sciatic notches.

What do the lateral portions of the pelvis include? The ischia and ischiatic notches with a part of the obturator foramina.

Fig. 6.



How is the pelvis divided above and below? Into false pelvis above, and true pelvis below.

What forms the boundary line between the two? The linea-ilio-pectinea.

What is the upper portion called? Pavilion; false pelvis; and abdominal pelvis.

What is its general description? It is defective directly in front, is expanded and elevated at the sides, while posteriorly it is again diminished except in the central portion, where it is somewhat filled up by the promontory of the sacrum and the lower lumbar vertebræ.

What influence do these lumbar vertebræ, and the promontory of the sacrum exert on the position of the child? They project so far into the cavity of the abdominal pelvis as to divide it into two portions, and cause the child to slide off to one side.

What is the distance between the superior anterior

spinous process of one ilium and that of the other? From nine to ten inches.

What is the distance between the middle point of one crest and that of the other? From ten to eleven inches.

What is the depth of the upper or abdominal pelvis, that is, from the top of the crista to the linea-ilio-pectinea? From three and one fourth, to three and a half inches.

Which is of most importance in obstetrics, the superior or inferior pelvis? The inferior, or emphatically *the* pelvis.

PELVIS PROPER.

What is its general shape? Conoidal, with its base upwards.

What are its principal openings? One above, and one below.

What are these openings called? Straits.

Why? Because they are rather more contracted than the space between them.

What is the space between the straits called? The cavity or concavity, basin, etc.

Are these straits just alluded to, not identical with the cavity? They are the initial and terminal portions of the true pelvis, but should always be distinguished from the cavity itself.

What is the shape of the superior strait? Cordiform, or somewhat elliptic, with one end of the ellipse depressed.

What constitutes the superior strait? The top of the symphysis pubes, the linea-pectinea, the linea-ilea, and promontory of the sacrum.

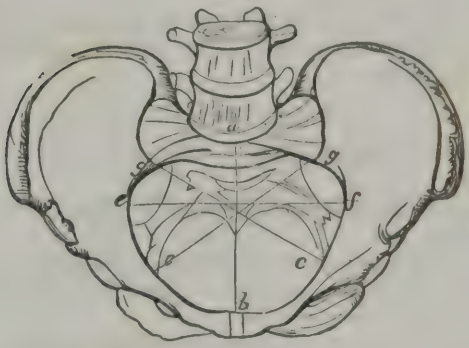
What is the circumference of the superior strait? From thirteen inches to thirteen and a half.

What number of diameters of this strait are recognized in practice? Four.

What are they? First, antero-posterior, or sacro-pubic, measuring from four, to four and a half inches.

Second, oblique, from points in the linea-ileo-pectinea (*e*) diagonally to the sacro-iliac symphysis, (*g*) measuring five inches. Third, the transverse, or bis-iliac, on the transverse median line, from one point of the linea-ileo-pectinea (*e*) to the opposite (*f*), measuring five and one fourth inches.

Fig. 7.



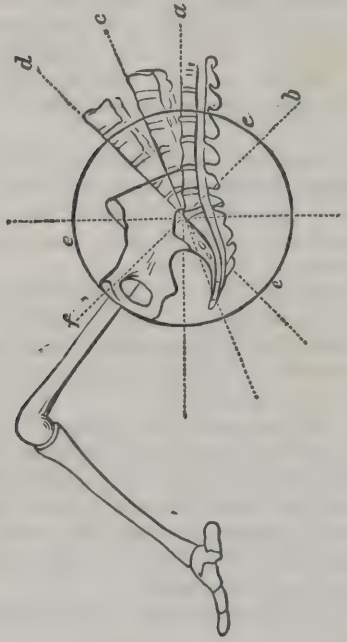
What is the direction of the axis of the superior strait? It commences about the point of the coccyx: passes at right angles with the plane of the strait through its centre, and would make its exit through the abdominal parieties about the umbilicus.

What relation does this axis hold to the pelvis, and to that of the body? It is always uniform with regard to the pelvis, but it is variable with regard to the body.

How is the inclination of the superior strait best defined? Professor Meigs says, when the woman stands erect, or lies at length on her back, the plane of the strait dips at an angle of 50° below the conjugate diameter. It must clearly appear that the plane of the superior strait dips at a variable angle in various positions of the trunk of the body; for if

the subject be standing it dips as above at 50°; but if the trunk be inclined forwards, the dip will be lessened: or, if the trunk be inclined far backwards, it may be increased. Now this is an important item of obstetrical knowledge, since upon it is founded our advice as to the decubitus of the patient, whom we

Fig. 8.



may direct to extend the trunk, or to flex it more or less, as we may or may not desire to bring the plane of the superior strait into a position that may favour both the entrance of the presenting part into the strait and its passage through it.

By figure 8, it may be shown that the plane may give different angles with the spine, according as the spine is brought more forward, or carried further backwards—(*e e e*) is a circle of which the diameter (*b f*) represents the inclination of the plane of the upper strait equal to an angle of 135° (*f a*) which is the ordinary altitude of the spinal column or axis of the trunk. If the patient, lying on her back, should have her shoulders raised, so as to carry her spine forward to (*c*), equal to 22.30°, the angle would be reduced to 112.30°. But if the shoulders should be still more elevated to (*d*) the axis of the trunk, would be at right angles to the plane of the strait (*b f*).

Place the woman on her left side in bed, and by the same reasoning the accoucheur may direct the patient to modify the inclination or dip of the inlet of the pelvis, by inducing her to keep the spinal column strait or curving it forwards.

What practical hint is derived from a knowledge of this variability? That in difficult or tedious labors we should oblige the patient to incline her body forward to make its axis more nearly correspond with that of the superior strait.

What is the shape of the plane of the inferior strait? It is oval, or slightly cordiform, if we allow the coccyx to encroach upon its posterior extremity.

What are the boundaries of the inferior strait? The sub-pubic ligament in front, the rami of the pubes and ischia on each side, and the sacro-ischiatic ligaments and coccyx behind.

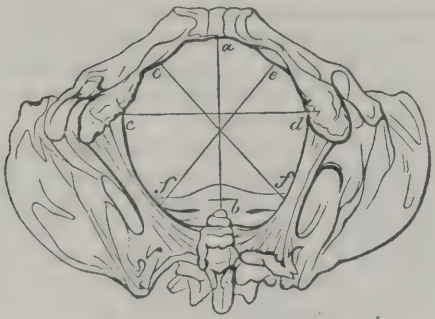
What is the circumference of the inferior strait? Twelve inches.

From what points do we reckon the antero-posterior diameter? From the posterior portion of the sub-pubic ligment, to the point of the coccyx, or better still, to the apex of the sacrum.

What is the distance? Four and a half inches; (*a* to *b*) fig. 9.

From what points do we reckon the transverse diameter? From the posterior part of the tuberosity of one ischium, to that of the other. (*c* to *d*) fig. 9.

Fig. 9.



What synonyme have we for this diameter? Bis-ischiatic diameter.

What does it measure? Four inches.

What other diameters should be remarked in the inferior strait? Two oblique.

Whence are they measured? From the junction of the ramus of the pubis, and the ramus of the ischium on either side across to the centre of the sacro-ischiatic ligaments on the opposite sides. (*e* to *f* *e* to *f*) fig. 9.

What is the space? Four inches; the same as the transverse diameter.

What is the direction of the axis of the inferior strait? Commencing just below the promontory of the sacrum, it passes downwards perpendicularly through the centre of the plane of the inferior strait, at the point of intersection of the antero-posterior and transverse diameters, and thus out about the posterior commissure of the undilated, or through the centre of the dilated vagina.

What is the difference between the transverse diameters of the superior and inferior straits? The transverse diameter of the superior strait is one half or three fourths of an inch longer than that of the inferior strait.

If we push back the coccyx, and thus make the antero-posterior diameter of the inferior strait equal to that of the oblique, or transverse of the superior strait, with what body might we compare the cavity of the pelvis? That of a cylindroid, twisted one sixth of its circumference upon its axis.

What are the supero-inferior measurements of the pelvis? From the top of the symphysis to the lower edge of the sub-pubic ligament, one and a half inches. From the top of sacrum to the point of coccyx, five inches; when the coccyx is pushed back, from five and a half to six inches. From the linea-ilio-pectinea to the tuberosity, three and a half inches; from the crest of ilium to the bottom of tuberosity of the ischium, seven inches.

What is the distance from the bottom of the sub-pubic ligament to the top of the promontory of the sacrum? Four and a half inches.

What is the distance from the bottom of sub-pubic ligament to the hollow of the sacrum? Four and three-fourth inches to five inches.

What is the distance from the bottom of the tuberosity of one ischium to the linea-ilio-pectinea directly opposite? Six inches.

What is the height of the arch of the pubes, from a line drawn on a level with the tuberosities of the ischia? Two inches.

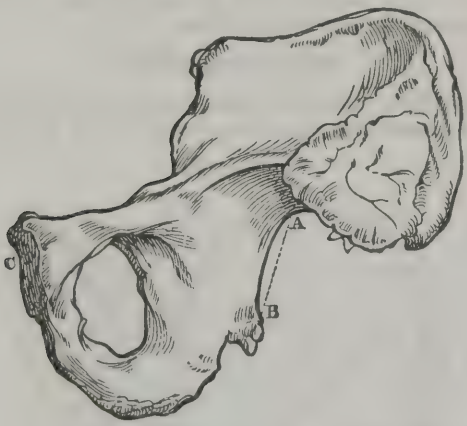
INCLINED PLANES.

Into what peculiar arrangement is the interior of the pelvis distributed? On each side of the antero-posterior median line are found two lateral inclined planes.

What is the direction of the anterior inclined planes

on each side? Commencing nearly or exactly at the sacro-iliac symphysis, they occupy all the space between that point and the symphysis pubes, and passing downwards and forward just in front of the spines of the ischia, over the obturator foramina, they terminate on the anterior edge of the rami of the pubes and ischia, and at the symphysis of the pubes; the space between A, B, and C, fig. 10, represents the right anterior inclined plane.

Fig. 10.



What is the arrangement of the posterior inclined planes? Commencing at the sacro-iliac junctions, at or below the linea-ilio-pectinea, they occupy the space between those points and the middle line of the sacrum, then pass downwards and backwards behind the spines of the ischia, over the sacro-sciatic foramina and sacro-ischiatic ligaments, to terminate upon the posterior edges of the tuberosities of the ischia, the lower edges of the sacro-ischiatic and coccygeo-ischiatic ligaments, and also the point of the coccyx.

Which of these occupies the greater space in the

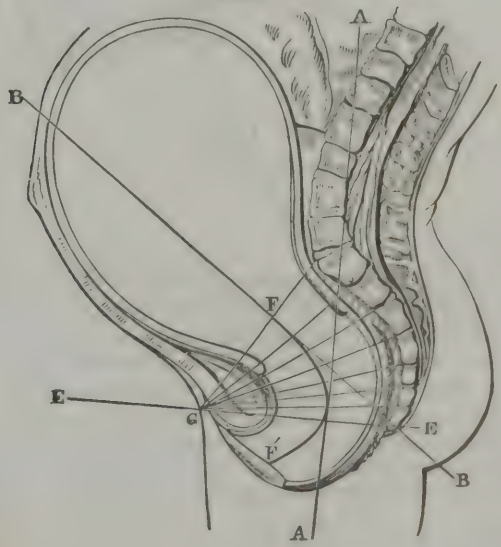
pelvic canal, the anterior or posterior inclined planes? The anterior, being both longer and wider.

What influence do these planes exert upon the mechanism of labor? Rotation. They direct the presenting part of the fetus. Thus if the occiput happen to be brought in contact with the pelvis anterior to the spine of the ischium, it must pass down upon the anterior inclined plane, and emerge under the arch of the pubes; but if the occiput happen to enter the pelvis behind the spine of the ischium, the posterior inclined plane compels it as it passes down, to rotate into the hollow of the sacrum, that it may escape at the posterior commissure of the vulva.

AXIS OF THE PELVIS.

Regarding the pelvis as constituted of a series of planes, extending from the sacrum to the pubes, from

Fig. 11.



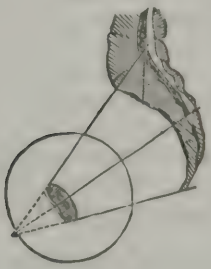
the linea-ilio-pectinea to the coccyx and sub-pubic ligament, how can we represent the axis of the pelvis? As a curved line, resembling that of a catheter adapted to the adult male, as shown in fig. 11, where (BB) represents the prolonged axis of the superior strait, (AA) that of the inferior strait, (EE) the plane of inferior strait prolonged beyond the arch of the pubes; (GF) the plane of the superior strait, somewhat extended, while the several lines radiating from (G) represent the planes of different segments of the cavity of the pubes, then the curved line (FF), passing at right angles through the several planes represents the curve of the catheter, while the extended line to (B), represents the straight portion of the catheter, as suggested.

Who has most beautifully delineated the curved direction of the axis of the various sacro and coccy-pubal planes of the pelvis? Professor Carus of Dresden.

How should you describe it? Set one leg of a pair of compasses in the middle of the posterior edge of the symphysis pubes of a bisected pelvis as in the accompanying figure 12—the other leg of the instrument being opened to the distance of the semidiameter of the sacro-pubal diameter of the superior strait. Commencing at this point in the diameter, describe a circle. Extend the sacro-pubal diameter by a dotted line, till it reaches the circumference; from the end of the coccyx, a little extended, produce a line to the end of the pubes, then continue it dotted till it reach the outer periphery of the circle:—draw also a line from the centre of the concavity of the sacrum through the inner periphery to the centre. Continue this as a dotted line to the outer periphery. It will be found that these three dotted lines will meet precisely in the same point in the outer periphery. This circle, according to Carus, will, for all ordinary purposes, sufficiently faithfully represent the axis of the various sacro-pubal, coccy-pubal and perinæo-

pubal planes of the pelvis. It is in the line of this curve that the centre of any body will be propelled, during its passage through the pelvis.

Fig. 12.



Of what value to practical midwifery is a knowledge of this disposition of the axis of the pelvis? It is indispensible to success and safety in all manual instrumental operations, whether for the delivery of the fetus or placenta.

What are the general points of difference between the pelvis of the female and the male adult? The capacity of the female pelvis is greater than that of the male, its diameter being larger, though its depth is less. In the male, the arch is narrow and high, while in the female it is broad, low, and well formed.

OF THE CONTENTS OF THE FEMALE PELVIS.

What muscles line the upper pelvis? The iliaci interni and the psoæ muscles.

What are the origin and insertion of the iliacus internus muscles? They rise from the anterior two-thirds of the crest of the ilium, in front of the psoæ muscles, and filling up the iliac fossa, are inserted with the psoæ muscles into the small trochanter of the femur.

In what respect do these muscles affect the diame-

ters of the superior strait in the recent pelvis? They diminish the lateral and oblique diameters from one fourth to one half of an inch.

Which diameter is the longer in the recent pelvis—the oblique or transverse? Ramsbotham says the oblique—Hodge the transverse diameter, while Cazeaux declares that the oblique diameters are not diminished in length by the presence of the muscles.

What muscles and fascia line and close up the inferior strait of the pelvis? The pelvic fascia, including the internal iliac vessels and branches—the internal obturator and part of the levatores ani, transversus perinei, and ischio-coccygeal muscles.

What are the origin and insertion of the levatores ani muscles? They arise from the inner part of the pubes, the superior part of the obturator foramen, and the spine of the ischium. Inferiorly the middle and anterior fibres unite beneath the rectum, enveloping this intestine, and they are inserted into the sphincter ani and perineum in front.

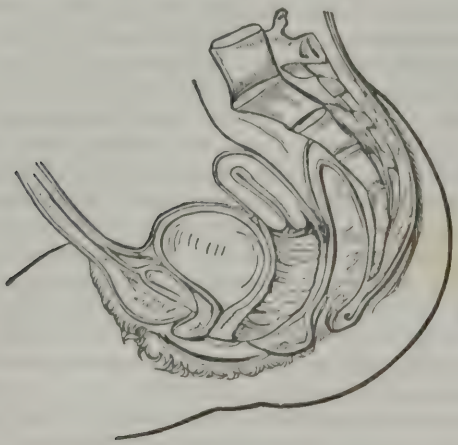
What is to be understood by the phrase, "floor of the pelvis?" All the tissues found extending from the lower part of the pelvis, and closing more or less the inferior strait. It is composed of the levator ani and ischio coccygeal muscles, which constitute the superior plane, and which is concave above; the sphincter-ani, transversalis perinæi, ischio-cavernosus and sphincter vulvæ muscles, and the aponeuroses, which are less resisting in the female than in the male, compose the inferior plane of the floor of the pelvis. The pubic vessels and nerves with cellular membrane and the integuments complete this floor.

What is observed on the antero-posterior median line of the exterior surface of the floor of the pelvis? The raphe of the perinæum, the point of junction of the several constituent tissues of the perinæum, and one whose rigidity in some cases, as well as its relative feebleness, subjects it to the risk of laceration, under powerfully distending forces.

What influence may the constituents of this pelvic floor exert upon the process of labor? They may, owing to the rigidity of the parts or spasm of the muscles, retard the exit of the presenting part of the child.

What viscera are contained in, and attached to, the pelvis? The rectum behind, the bladder in front, the uterus and its appendages in the middle and lateral portions of the cavity. The vagina, and other portions of the organs of generation occupy the lower portion of, and are attached to, the pelvis. Fig. 13 gives a lateral section of the contents of the pelvis, showing the rectum next the sacrum; next, and in the middle, the uterus and the vagina, and in front, the bladder in a state of partial distention.

Fig. 13.



GENITALIA, OR ORGANS OF GENERATION.

Do we speak of the whole group of organs of generation in a general or special sense? It should be understood in a general sense only.

How are the organs of generation classified? Into those of *external*, and those of *internal* organs of generation.

What are called the external organs? Pudenda, labia externa, clitoris, nymphæ, orifice of vagina, and perinæum.

What is usually included in this list, though it does not pertain to generation? The meatus urinarius.

What is the mons veneris or pudenda, and where is it situated? It is composed of a dense fibro-cellular adipose substance, covering the pubes and extending up to a line drawn between the anterior inferior spinous processes of the ilia.

By what is it covered? By thick strong hairs.

Where are the labia externa situated, and how are they arranged? Commencing upon the front of the symphysis pubes, they extend downwards and backwards to the perinæum; they are thick and prominent at their upper portion, but gradually diminish and become flattened as they pass towards their posterior termination.

What are the anterior and posterior points of junction of the labia called? The anterior and posterior commissures of the vulva.

What is the texture of the labia? Principally cellular and vascular.

What kind of investment has the labia? It is cuticular but passing into the mucous state.

What are the boundaries of the vulva? They embrace all the parts immediately surrounding the genital fissure.

What is found within the upper half of the labia majora? The nymphæ, or labia minora, or the labia interna.

What is the situation of the labia minora or nymphæ? They arise from nearly the same point at the anterior commissure, and pass obliquely downwards and backwards about an inch, and then are lost in the general lining of the labia externa.

What is the general shape of the nymphæ? Triangular.

What modifications of size or shape are they incident to? In the infant they are always comparatively large; and they may become greatly elongated and enlarged, and consequently suffer much alteration in shape at later periods of life.

Is a knowledge of this enlargement of consequence to the practitioner? Enlarged nymphæ may be entangled within the obstetric forceps and be torn, or otherwise they may embarrass the use of instruments.

What is the anatomical structure of the nymphæ? It is cellular, very vascular, and has the properties of an erectile tissue.

What kind of external covering has it? A very delicate dermoid, or perhaps mucous membrane.

What is to be found at the superior extremity of the nymphæ? A little hemispherical body, called the glans clitoridis.

What is this glans the termination of? The clitoris, which appears to be a rudimental penis.

In what respect does it differ from the male organ? It is much less than it, and has no corpus spongiosum urethræ.

What overhangs the glans clitoridis? A fold of membrane, called the preputium clitoridis.

How low do the nymphæ descend? To the middle of the orifice of the vagina nearly.

What is the space between the nymphæ called? The vestibulum.

What are the characters of the vestibulum? It is a smooth, triangular surface, covering the facette of the symphysis pubes and is bounded on each side by the base of the nymphæ, having the clitoris as its apex, and a line drawn from the lower terminal extremity of one nymphæ to that of the other, through a perforated caruncle.

What is that tubercle or caruncle called? The meatus urinarius, or orifice of the urethra.

URETHRA.

What is the position of the urethra, with regard to the arch and symphysis of the pubes? Mostly immediately below the one and behind the other.

Is the tubercle or caruncle of the urethra always well developed and easily to be recognized by the touch? Considerable variety is observable in the investigation of many cases. Sometimes, for example, the orifice is very thin, merely membranous. Sometimes, it is very patulous and funnel shaped.

Does the urethra pass off in a strait or curved line from the body of the bladder? In a line curved downwards and forwards.

What circumstances may modify the direction of the orifice and the course of the canal? In some degrees of prolapse of the uterus or vagina, the urethra is more curved—in extreme cases it is nearly inverted—while in advanced pregnancy, retroversion of the uterus, or in cases of enlarged pelvic tumors it is often drawn up tightly behind the symphysis of the pubes.

How long is the female urethra? About one inch.

By what is it lined? Mucous membrane.

In what direction do the folds of the mucous membrane of the urethra run? Longitudinal and not usually transverse.

What is there in the female urethra, analogous to the prostatic portion in the male? A thickened condition of the vagina, anteriorly, and a developement of the cellular membrane on the posterior part of the urethra.

What is to be found at the orifice of the urethra? A little caruncle generally, sufficiently prominent to offer some resistance to the touch of the finger.

What little folds exist in the canal of the urethra? Folds of mucous follicles, which are sometimes considerably developed.

What is the general shape of the empty bladder in the female? Globular.

VAGINA.

What is found immediately below the meatus urinarius? The orifice of the vagina.

What are the boundaries of the orifice of the vagina? All that portion just in front of the part embraced within the sphincter vagina muscle.

What is the vulvo-uterine canal? It is the vagina, a canal leading from the vulva to the uterus.

What muscle surrounds the vagina near its orifice? The sphincter vaginæ.

What are its origin and insertion? It arises from the posterior portion of the vagina near the perinæum, thence it runs up the sides of the vagina near its external orifice opposite to the nymphæ, and covers the corpus cavernosum vaginæ, and is inserted into the crus and body of the clitoris, on each side.

What influence can it exert? It is often feeble, but sometimes so powerful as to close firmly the anterior portion of the canal.

What is the length of the vagina, or vulvo-uterine canal? From four to six inches. Sometimes it is much less than this.

What is its direction in the pelvis? It is curved upwards.

What are the directions of its long diameters? At its external extremity the long diameter is in the direction of the genital fissure, antero-posterior—near its middle the long diameter is transverse and longer than the first, while at the upper part it is still longer.

What is the length of the antero-posterior diameter of the orifice of the vagina? From half an inch to an inch, in its undistended state.

Is the vagina susceptible of becoming much enlarged? Not only may its circumference be increased to that of the cavity of the pelvis during parturition, but it may, and sometimes does become sufficiently large and long to contain the entire fetus between the uterus and the vulva, during part of the parturient effort.

What part of the vagina has most sensibility? The external orifice, just at the point of union or transition of dermoid and mucous tissues.

What is the anatomical structure of the vagina? Cellulo-fibrous, with a mucous lining membrane.

Whence is the mucous secretion furnished in the vagina? From a large number of mucous follicles arranged within the canal.

What is the arrangement of the lining mucous membrane? Arborescent—though some of the folds are longitudinal, particularly those anterior and posterior, while others are transverse, and are sometimes called columns of the vagina.

What supply of blood-vessels has the vagina? Besides the arteries which carry blood to it, the canal is nearly surrounded by a plexus of veins.

In what respect is the texture of the vagina different from that of the nymphæ? It is non erectile, and some portions of it probably contain thin muscular fibres.

What is the condition of the vagina in the virgin female? It is small, and near its orifice is partially closed by a duplication of lining membrane called the hymen.

HYMEN.

What is the shape of the orifice of the hymen? It is variable. Sometimes triangular; sometimes oval, round, lunated, and even cribriform, or pierced with several holes.

Is it always present in the virgin female? It is sometimes perhaps congenitally absent, but most probably because it has been destroyed in infancy by injudicious management in washing and wiping the parts.

Is it ever thrown so completely across the orifice of the vagina as to close it up entirely? In some cases this condition is found to exist.

About how far within the vulva is the hymen in the adult female? Half an inch.

What becomes of the hymen after it is ruptured? The lacerated surfaces cicatrize, and form several little

eminences upon the surface of the vagina, which have been called caruncule myrtiformes.

Is it a settled matter that all the mulberry-like caruncles are formed in this way? Velpeau, at least, thinks that two or more of them exist originally and independently of this cicatrization of the ruptured portions of the hymen.

What is found at the inferior portion of the hymen and anterior to it? A depression, called the fossa navicularis.

What is its inferior boundary? The frenum labiorum, frenulum perinei, or the fourchette.

PERINÆUM.

What is found posterior to the orifice of the vagina? The perinæum.

How long is it when undistended? About one and a half inch.

To what extent may the term perinæum be applied? To every portion of the distensible parts found at the inferior opening of the female pelvis.

What is the shape of the perinæum? As usually described it is triangular.

What are its boundaries? As viewed by some obstetricians, as including all the distensible parts of the inferior opening of the pelvis, its boundaries should be those of the inferior strait of the pelvis.

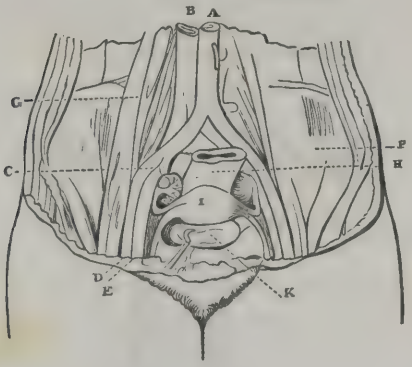
What is the composition of the perinæum? Several muscular layers, as the transversus perinæi, the levatores and sphincter ani muscles, &c., then a considerable portion of distensible cellular and dermoid tissue, &c.

Of what degree of dilatation is the perinæum susceptible? Nearly or quite sufficient to cover the head of the child when extruded beyond the inferior strait.

What may be seen in the recent female subject, if the anterior parietes of the abdomen and the intestines are removed? The bloodvessels and the vis-

cera of the pelvis. Thus in fig. 14, are seen at A, the aorta; B, vena cava; C, one of the internal iliac arteries descending into the cavity of the pelvis; D and E, one of the external iliac arteries and veins; F, G, the psoas muscles; H, the rectum; I, the fundus of the uterus; K, the urinary bladder.

Fig. 14.



UTERUS.

What kind of organ is the uterus? It is a *gestative*, not a *generative* organ.

What is the particular shape of the uterus? Pyriform, or conical, somewhat flattened antero-posteriorly.

Which is the flatter surface, the anterior or the posterior? The anterior.

For general purposes of description, what shape may we assume for the uterus? Triangular.

How many sides and angles has it? Three sides and three angles.

What go off from the superior angles? Two appendages called fallopian tubes.

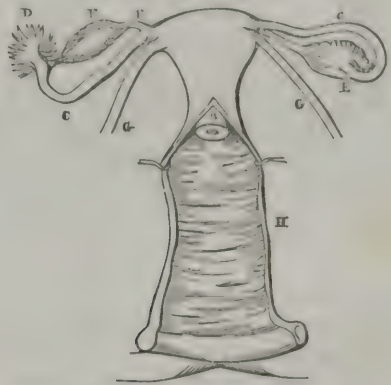
What name is given to the part above these tubes? Fundus of the uterus.

What proceed from the antero-lateral surfaces just

below the fallopian tubes? The round, anterior or utero-pubal ligaments.

Fig. 15, B, shows the portion of the uterus which projects into the vagina; H, the vagina, opened on its upper or anterior portion, and spread out laterally; C C, represent the fallopian tubes, the fibriated extremity of one of which is shown at D; E E indicate the ovaries; while F points to the right ovarian ligament, which for convenience is here shown as above the fallopian tube; G G, the segment of the round anterior or superpubal ligaments.

Fig. 15.



What portion is called the body of the uterus? All that part between the superior angles and the cylindrical portion; in other words, all the truly triangular portion of the whole organ.

What portion is called the neck? All the cylindrical portion.

What covers the uterus externally? Peritonæum.

What is meant by the terms broad ligaments of the uterus? They are lateral expansions of peritonæum from the sides of the uterus towards the lateral and posterior portions of the inner surfaces of the pelvis.

What is the shape of the cavity of the uterus? Triangular.

What relation do the anterior and posterior portions of the walls of the uterus hold to each other? They are so nearly in contact, that there is very little space between them.

What is found at each angle of this cavity? The orifice of each fallopian tube at the two upper angles, and the internal mouth of the uterus at the lower angle.

What kind of lining membrane has the cavity of the uterus? It appears to be a mucous membrane.

How is it ascertained that the lining consists of a mucous membrane? Both from its physiological functions and its pathological derangements.

What cavity is situated below the internal orifice of the uterus? The cavity of the neck.

What is the shape of this cavity? It is somewhat elliptical, or barrel shaped.

What is the arrangement of the lining or internal surface of the neck? Arborescent.

What are found in the folds of the neck? A number of mucous follicles formerly called ovula nabothi.

What is the character of the external mouth of the uterus? It is somewhat elliptical, with its longer diameter transverse; it presents an anterior and a posterior smooth rounded lip, and more or less prominent.

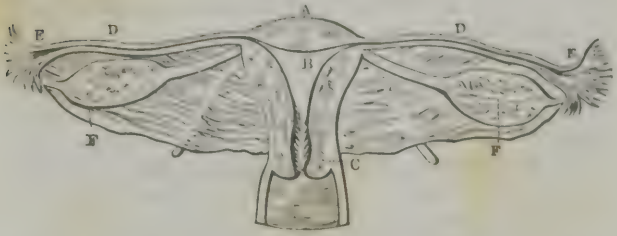
Which of these lips is the larger? The anterior is larger and broader than the posterior.

What is the usual shape of the orifice of the uterus in the virgin female? Rounded and very small.

At A, fig. 16, is represented the fundus of the uterus; B, the triangular cavity. All the internal genitalia having been cut in two, so that the cut surface of the anterior half is here shown. B is the triangular cavity, which as may be observed, terminates in the barrel-shaped neck with the arborescent arrangements of its internal lining, *c*. D D gives a view of the inte-

rior of the fallopian tubes, E E, the fringelike extremities.

Fig. 16.



How may we distinguish one which has been the subject of one or more pregnancies or deliveries? By the fact that it is more elliptical and somewhat jagged at the internal edges of the lips of the external os uteri.

What technical name is sometimes given to the external os uteri? That of os tincæ, from its resemblance to the mouth of a tench fish.

How is the vagina reflected from the os uteri? Anteriorly it passes off so directly and apparently at right angles, that the anterior lip appears to be on a level with it. Posteriorly it passes off in a duplication from near the middle portion of the neck, and thus presents a cul-des-ac, and at the same time gives an impression to the finger that the posterior lip is longer than the anterior.

How long is the uterus? Two and a half inches.

How wide at the upper angles? One and a half inches.

What is the length of the neck? One inch.

What is the thickness of the uterus? Its body is nearly an inch thick.

What sensation should a healthy living uterus communicate to the touch? The os tincæ should present a smooth surface with regular surface of lips, and about

the density of a dead uterus hardened in alcohol, or an impression similar to that of the tip of the nose.

What is the texture of the uterus? It is essentially fibrous, but susceptible of great development during pregnancy.

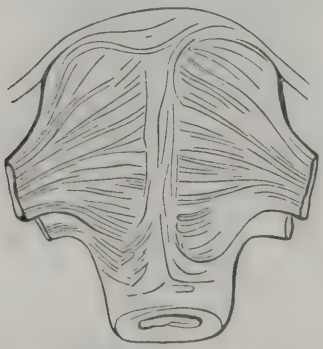
From what circumstance do we infer the existence of muscular fibres in the uterus? The phenomenon of alternate contractions during parturition.

What has been observed by Professor Hodge, of the direction in which the fibres contract during the effort to expel the placenta? That they flatten the uterus and shorten its antero-posterior diameter.

What is the arrangement of the muscular fibres? They appear to originate in a median line, at the front, back and sides of the uterus, and to run off towards the fallopian tubes and round ligaments, &c.

Where are the circular fibres distributed? About the neck, and around the upper angles or cornua of the uterus.

Fig. 17.



Who has best succeeded in demonstrating the arrangement of the muscular fibres? The late Madame Boivin of Paris.

BLOOD VESSELS OF THE INTERNAL ORGANS OF GENERATION.

What arteries supply the internal genital apparatus with blood? The spermatic and hypogastric arteries.

Do these two vessels distribute their blood equally to all parts of the uterus and ovaries? The spermatics, after sending branches to the tubes and ovaries, pass on to the uterus to anastomose freely with the ulterior uterine branches of the hypogastrics; the greater portion of blood in the upper part of the uterus is furnished by the spermatics, while the hypogastrics alone supply this fluid to the body, neck and the vagina.

How are the uterine veins distributed? The veins of the uterus, which constitute portions of the spermatic tracts passing from the inner to the outer surface, form a great net-work in the muscular tissue of the organ as is shown in

Fig. 18.

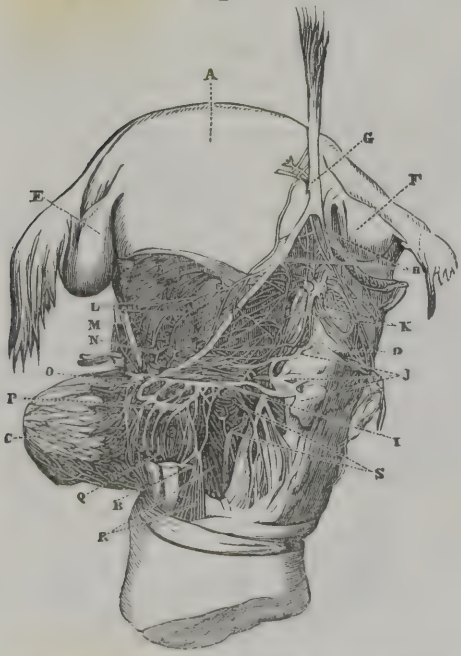


NERVES OF THE UTERUS AND APPENDAGES.

From what sources do the uterus and its appendages derive its nervous filaments? From the great sympathetic and the intercostal nerves.

To whose patient and laborious investigation are we principally indebted for the best illustration of the distribution of the nerves upon the internal organs of generation? To Dr. Robert Lee, who has, in conjunction with the history and demonstration of the nerves of the uterus, given the accompanying diagrams and explanations, which show the posterior and lateral view of the gravid uterus in the fourth month of pregnancy, of the vagina, rectum, and bladder, with

Fig. 19.

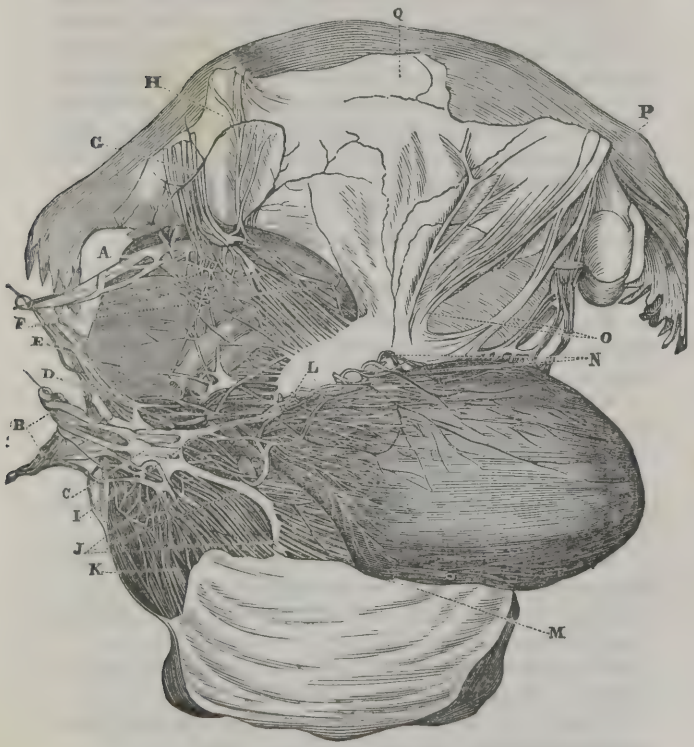


their ganglia and nerves. A, the fundus and body of the uterus covered with peritoneum. B, the vagina. C, the bladder. D, the rectum. E F, the ovaries. G,

the great sympathetic nerve, where it divides into the two hypogastric nerves and plexuses. The arteries and veins of the great sympathetic are all injected in the preparation from which the drawing has been made. A little above the bifurcation of the great sympathetic nerve there is a deposit of cineritious matter in its substance, and the nerve itself is enlarged as high as the kidneys. H, the right and left hypogastric nerves and plexuses. The artery of the right is injected, and accompanies the nerve to the great ganglion at the cervix, in which it terminates. I, the left hypogastric or great utero-cervical ganglion, with an artery passing into it near the centre. J, the third and other sacral nerves, sending numerous large branches into the posterior border of the ganglion, and the whole of its outer surface. K, the hemorrhoidal nerves accompanying the arteries to the rectum, and sending numerous branches to anastomose with nerves sent off from the posterior edge of the ganglion. L, branches of nerves with ganglia sent off from the left hypogastric nerve, which pass down on the inside of the ureter to the trunks of the uterine artery and veins, and enter ganglia which surround these bloodvessels. M, the left ureter, with a nerve accompanying it, which passes into the vesical ganglion, situated on the anterior part of the ureter. N, rings of nerve, surrounding the uterine bloodvessels. O, the middle vesical ganglion, into which large nerves enter, which are sent off from the anterior of the left hypogastric ganglion, and pass on the outside of the ureter. P, broad flat ganglia, formed on the great plexus of nerves which covers the upper part of the vagina. Q, the orifices of the divided veins of the vagina, which are completely encircled with ganglionic plexus of nerves. R, filaments of vaginal nerves passing under the sphincter. S, large nerves covering the posterior wall of the vagina, and anastomosing with the hemorrhoidal nerves.

What is represented on the anterior and latter faces of the uterus dissected for this purpose? A, the right hypogastric nerve. B, the sacral nerves. C, the right hypogastric ganglion. D, nerves from

Fig. 20.



the hypogastric nerve to the ganglia on the bloodvessels of the uterus. E, ganglia surrounding the uterine arteries and veins. F, ganglionic plexus, under

the peritoneum on the fore part of the uterus. G, filaments from this plexus passing out with the round ligament. H, the round ligament. I, the right ureter and trunk of the vaginal and vesical veins surrounded with nerves. J, ganglia and nerves of the vagina. K, nerves passing between the vagina and rectum. L, ganglia and nerves of the bladder. M, vaginal nerves passing into the bladder around the ureter. N, bloodvessels and nerves of the upper part of the bladder. O, plexus of nerves under the peritoneum on the left side of the uterus, the bloodvessels of which have not been injected. P, filaments from this plexus passing out with the round ligaments. Q, the peritoneum of the anterior part of the body and cervix of the uterus reflected upwards, to expose the ganglionic plexuses situated below.

OVARIES.

Where are the ovaries situated? In the folds of the lateral or broad ligaments, at a little distance from the uterus, one on each side.

What office do these bodies perform? They mature for fecundation, the germ of the new being.

How are they connected with the uterus? By a ligamentous attachment only. They project from the posterior portion of the broad ligament, but are covered by it and are suspended only by one edge.

What is the shape of the ovaries? They are oval bodies, slightly flattened antero-posteriorly.

What is the usual size of the ovaries? Rather smaller than the testicles of the male.

What other investment have they beside the peritonæum? A proper tunica albuginea.

What is the texture of this coat? Sometimes thick, sometimes thin.

What is found in the parenchyma of the ovary, after the seventh, eighth, or ninth year of female life? Ten, twenty or thirty or more, little bodies called the Graafian vesicles.

What are the vesicles? The capsules, which contain the ovules.

FALLOPIAN TUBES.

How long are the fallopian tubes? From four to five inches.

What is their general shape? That of a trumpet, having the small end at the angles of the uterus, and the larger floating free in the cavity of the pelvis.

What is the general arrangement of the cavity of the fallopian tubes? At their termination in the uterus the duct or canal is large enough to admit of a middle sized probe, it then diminishes towards the middle, so that at this part scarcely a bristle could pass along it, after which, it continues to increase somewhat irregularly, until it acquires a diameter of two or three lines.

What is the outer extremity called? The pavilion.

What is the peculiar mode of termination of the fallopian tubes? They have a digitated or fimbriated extremity called, the *corpus fimbriatum*, or *morsus diaboli*.

What direction do the tubes take in the cavity of the pelvis? They go off nearly horizontally, but are exceedingly tortuous, and curve backwards, and towards the ovary, to some part of which the largest of the fimbriæ is sometimes attached.

What is the anatomical structure of the tubes? Its principal tissue is fibrous, having perhaps some muscular fibres interspersed. It is lined by mucous membrane and covered by a peritonæal coat.

Into what cavity do the fallopian tubes open? Into the cavity of the pelvic portion of the peritonæum.

In what part of the female system do the mucous and serous tissues unite? At the fimbriated extremity of the fallopian tubes.

ANTERIOR AND POSTERIOR UTERINE LIGAMENTS.

What other ligaments has the uterus besides the broad ligaments? The anterior, or round ligaments, and the posterior, or utero-sacral ligaments.

What are the points of origin and insertion of the round ligaments? They arise from the superior part of the body of the uterus, just below and a little in advance of the fallopian tubes, and pass horizontally forwards through the abdominal canal, to be distributed beneath the mons veneris, upon the bodies and symphysis of the pubes.

Where are the posterior uterine ligaments situated? They spring from the posterior portion of the neck near its middle, and diverging, they ascend towards the middle portion of the lateral edges of the sacrum, and are lost in the cellular membrane which covers that bone.

With what are all the uterine and ovarian ligaments invested? Peritonæum.

In what direction do the nerves, blood-vessels, and absorbents reach the uterus and appendages? Through the folds of the peritonæum or the lateral ligaments.

Does the peritonæum extend below the posterior part of the neck of the uterus? It is not only spread over the whole of the posterior part of the uterus, but also upon the vagina to nearly or quite one third of its entire length, and thus makes a peritoneal culde-sac in consequence of its being reflected back from that point upon the rectum.

What precaution should the knowledge of the extreme tenuity of the vagina and its proximity to the large serous sac, suggest to the mind of the obstetric physician? Delicacy of manipulation in all cases which requires that a hand or instrument should be introduced along this portion of the canal into the uterus.

FUNCTIONS OF THE GENITAL ORGANS.

What is the condition of the internal organs of generation in the fetus? They are very small, the uterus is almost lost in the broad ligaments. The same may be said of the ovaries.

At about what age do the ovaries appear to become vascular? Seven years.

What physiological changes have taken place at the period of life called puberty? All the internal organs have become more developed, more vascular; the uterus has acquired greater size, and is more soft; the mons veneris is covered by hair; there is an increased flow of blood to the pelvic viscera, and to the head; the face becomes more or less flushed; the voice is altered, and the moral sensibility is more acute.

At what period of life do these changes occur? At the fourteenth or fifteenth year in temperate climates.

What function is the genital organs then capable of performing? That of reproduction.

MENSTRUATION.

What function does the uterus actually perform when all these physical changes have regularly occurred? That of menstruation.

What is to be understood by the function of menstruation? That in which the uterus at regular periods secretes a certain amount of sanguinolent fluid.

What are the synonyms of menstruation? Catamenia, menses, courses, *monthlies*, *terms*, monthly terms, monthly periods, *the reds*, *being unwell*, *indisposed*, *has her troubles*, *&c.*

Whence is this fluid furnished? From the internal surface of the uterus.

What proof have we that it is derived from this source? It is always accompanied by some degree of uterine iritation: when occlusion of the orifice of

the uterus exists, the secretion is still eliminated by the capillaries, but retained within the cavity of the uterus.

What are the characteristics of the menstrual fluid? It is a sanguinolent fluid, of a peculiar quality and odour, of a color usually between that of venous and arterial blood; it is not coagulable, nor does it putrify readily.

At what periods of life does this secretion usually commence? In hot countries from nine to ten years; in temperate climates, from fourteen to fifteen years; in cold regions, from eighteen to twenty years.

At how early a period are females of tropical climates known to be capable of bearing children? At ten years old.

What influence have these hot climates upon the continuance of the power of reproduction? Females who begin this function early, also decline early.

What is observed in this respect in regard to cold countries? That the capability of reproduction, though beginning later, is continued to a much more advanced age.

What difference is observable in the condition of females residing at the top, and those at the bottom of high mountains? Those on the top are more tardy, but continue much longer, while those at the foot, have the function of menstruation begin and end much sooner.

What difference is observed between the girls residing in a country place, and those who inhabit large cities? That those in the country do not usually begin as soon to menstruate as those who live luxuriantly in large towns.

What influence does temperament usually exert? Those of a nervous temperament usually menstruate earlier and more abundantly than those of phlegmatic temperament.

What are the general symptoms accompanying a menstrual effort? An unpleasant feeling of languor,

weariness about the loins, sense of fulness in the hypogastrium, a disposition frequently to urinate and defecate. Sometimes great nervous excitement, perhaps even hysteria; the breasts swell and feel more or less tight and painful; there is headach, palpitation, and a peculiar odour of the breath in some cases.

What is the usual color of this fluid at the first time it is discharged? Pale red or pink color.

How long does the first discharge continue? Sometimes only a few hours, and rarely ever more than two or three days.

At what period do these symptoms and the discharge return? At the end of one lunar month.

When the menstrual function is fairly established, how many days are usually occupied in the discharge? In temperate climates from five to seven days.

What influence does the health of the patient exert upon the menstrual function? Delicate women usually menstruate more abundantly than the more robust, but in some diseases it is altogether interrupted.

What is the usual quantity discharged at each period? In temperate climates, probably from four to six ounces. In tropical climates, from ten to fifteen ounces; while in frigid zones, the quantity is very small.

What is observed in corpulent women in reference to menstruation? That they usually have a greater discharge than those who are thin.

Is the menstrual function easily disturbed? In those of nervous temperaments and irritable constitutions, it is very easily disturbed by physical and moral causes.

What is the usual duration of the menstrual period of female life? About thirty years.

TERMINATION OF THE MENSTRUAL FUNCTION.

At what age does this function usually subside? At from forty-five to fifty; but much earlier in hot countries.

What is the period of female life at which this function subsides usually called? Change of life.

What is observed in reference to the subsidence of this function at this period of life? It becomes very irregular, sometimes profuse for one time, then passes over a month or more, then returns profusely, and finally subsides altogether; when slight, it is usually painful; and when profuse debilitating.

Into what character of discharge does menstruation often pass before it ceases altogether? Into that of a leucorrhœal or sero-mucous, or albuminoid fluid.

What physical changes are observed to take place in the female upon the arrival of this period of her life? Her capillary circulation becomes less active, the cellular and adipose matters of the mammæ are absorbed, there is a general shrinking of her person, and that beautiful rotundity of her form disappears.

What alteration does her pulse undergo? It becomes slower and feebler, and it acquires more of a congestive, or apoplectic character.

In what respect is this period to be regarded as the *critical* period of life? Because it is observed that generally, if there be no local predisposition to disease, women usually have their health improve after the cessation of menstruation: but if strongly disposed to any malignant affection, this disease is liable to become more rapid in its course to a fatal termination.

What precise knowledge have we respecting the cause of the function of menstruation? None whatever, notwithstanding the numerous speculations on this subject. Until within the last quarter of a century, ideas of the causes of the periodical flow of bloody matter from the genitalia of females, were exceedingly vague and often perfectly absurd. The patient and laborious investigations of Purkinje, Von Baer, Prevost and Dumas, Coste, T. Wharton Jones, Wagner, Bischoff, Raciborski, Gendrin, Negrier, Lee, Bouchet and some others, have contributed greatly towards the establishment of the belief that menstruation is dependent upon ovulation, that it is mostly if not al-

ways coincident with the perfection of the female germ or ovule, and its separation from its nidus, the Graafian cell, to be conveyed into the uterus, when should it have become fecundated it would remain during its allotted period of gestation, but from which it is carried with the fluid eliminated from the mucous or blood membranes.

What condition does the ovary usually exhibit at the menstrual epoch? One of the Graafian cells is found to be turgid and ready to be eliminated from the cyst, or there is to be found a little lacerated spot which is the opening of a small cavity containing a clot of blood.

CORPUS LUTEUM.

What is a corpus luteum? It is a yellow body found in the ovaries of animals that have recently been in sexual heat, and in those of the human female, and shortly after they have menstruated, or become pregnant.

What has hitherto been the estimate put upon the discovery of this yellow body in the ovary? That the woman had surely eliminated a fecundated germ from the Graafian cell in which the corpus luteum was found occupying.

What is the opinion of Professor Meigs on this subject? That the existence of this yellow body in the ovary is an evidence of finished ovulation and not necessarily of fecundation:—that is, the corpus luteum exists in the ovary at the close of every menstruation, because at that time an ovule has been matured, and separated from the ovarian stroma, whether it has been fecundated or not.

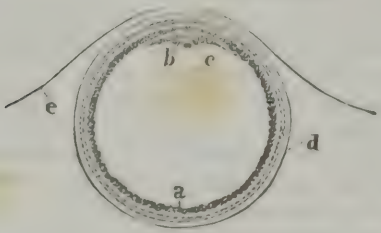
What is his opinion of the physical qualities of the corpora lutea? That they are vitellary, in all respects resembling the yolks of eggs.

What is to be found in the Graafian cells, by laying them open? A small drop of fluid like water.

What are the microscopic properties of the contents

of a Graafian vesicle? A transparent fluid containing a vast number of granules, surrounding an albuminous fluid, at a point in the periphery of the granular layer, may be found a spot, indicated by Purkinje, and called by him the germinal vesicle. On one side of this vesicle is an opaque spot, called also the germinal spot. The germinal vesicle is about one sixtieth of a Paris line in diameter, while the germinal spot is from the one hundredth to the one three hundredth of a line in diameter. Fig. 21 is a diagram of a section of the Graafian vesicle and its contents, showing, the situation of the ovum. *a* represents the granulary membrane; *b*, the accumulation, called by Baer, the proligerous disc, *c*, the ovum, or the germinal vesicle; the dotted lines running to *d*, represent two walls, inner and outer of the Graafian vesicle, while *e* points out the indusium or sub-peritoneal tissue, directly underneath which, again is the stroma of the ovary so condensed as to make the tunica albuginea.

Fig. 21.



REPRODUCTION OR GENERATION.

What is generation? It is the function of reproducing the species after the form originally impressed upon it. It is therefore the function peculiar to animated or living beings.

What is the simplest form of generation? Fissiparous generation, which does not require sexual or-

gans—it is in other words, generation by spontaneous division?

What is the next higher grade or kind of generation? That which is called germniparous, consisting in the formation of buds or germs on some parts of the body, either internally or externally.

What are the germs in the female of the higher order of animals? The ovules, situated within the ovarian vesicles.

At what period of life do these germs in the human female exist? Between that of puberty and the "change of life."

Where is the male germ found in vegetable life? In the pollen of plants.

What is the male germ in animals? It exists in the fluid secreted by the testicles.

What is necessary to constitute fecundation? The contact of the male and female germs.

What may be said of the theories of generation? That they are numerous and some of them vague, and it is true that the whole subject is shrouded in an impenetrable mystery.

What are the two principal theories in reference to conception? 1. That of *epigenisis*, which is probably the oldest, and which supposes that it depends upon the conjunction of the male and female germs in the uterus, and that each contributes its portion to the formation of the new being. 2. That of *evolution*, in which it is assumed that the mother furnishes the entire molecule, and that the stimulus of the male sperm only excites it into vital activity.

Which appears to be the most rational theory of generation? 1. That of the ovular, in which it is believed that the elements of the new being reside in the ovule, secreted by the ovary. 2. That of *evolution*, in which the sperm of the male operates merely by its stimulus upon the female germ or ovule within the ovarium.

FECUNDATION.

Is the semen masculinum, in its totality, necessary to produce a fecundation of the female germ? Yes.

What were the experiments of Spallanzani, of Prevost and Dumas, in reference to this? They found that it was necessary that the fluid they used for artificial fecundation, should contain the peculiar animalcules or molecules existing in the semen masculinum.

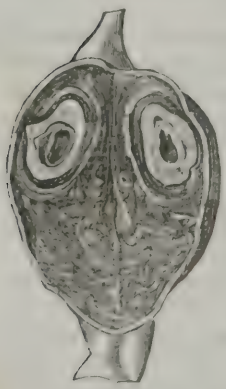
Is there any analogy in the modes of fecundation in vegetables and animals? The presence of the pollen is necessary to the developement of the germ.

How does fecundation take place in the fish? By the deposite of the male sperm upon the spawn of the females.

What is the mode of fecundation in the frog and other of the batracian animals? The male sperm is thrown upon the female eggs, as they pass from her body.

Is a true copulation necessary in the mammiferous animals? Yes.

Fig. 22.



Is it necessary that the male germ be deposited within the female body? It is.

Is it most probable that the ovary is the point at which the two germs meet? That idea is generally embraced by physiologists of the present day.

What changes take place in the ovary after a fecundating copulation? One of the vesicles enlarges rapidly, soon rises above the surface of the organ, absorption of its peritonæal covering takes place, and it is soon embraced by the fallopian tube, and carried toward the cavity of the uterus. Fig. 22.

What is the appearance of an ovarium after the ovule has been removed? First, there is an effusion of blood

into the cavity, whence the ovule was taken—then a yellow cicatrix called the *corpus luteum*, or yellow body.

CONCEPTION.

What distinction does Professor Meigs make between fecundation and conception? 1. *Fecundation* is the vivifying and vitalizing of a maturated ovum by the application to it of certain elements produced by the male, no matter where they may be brought into contact, whether in the ovaries, the fallopian tubes or the uterus itself.

2. The term *conception* is restricted by him to the "fixation of a fecundated ovum upon the living surface of the mother."

PREGNANCY.

What is pregnancy? The retention and development of an embryo or fetus, within some part of the female.

How many kinds of pregnancy are there? Two—uterine or normal, and extra uterine or abnormal pregnancy.

What is the character of, or what constitutes a uterine or normal pregnancy? The fact that the ovule when fecundated, is removed from the ovary, carried along the fallopian tube and deposited in the cavity of the uterus, in which it is retained and matured till capable of living after parturition.

What would you consider to be preternatural, abnormal, or extra uterine pregnancy? The circumstances of the development of the fecundated ovule in the ovarium, the fallopian tube, in the cavity of the peritonæum.

Into how many varieties is true uterine pregnancy divided? Simple pregnancy with one ovum. Double, triple, &c. pregnancy, when there are two, three, or more fetuses. Complicated pregnancy, when there exists a polypus, great quantity of water, or any diseased state of the product of conception, or of the womb itself.

What varieties does extra uterine, irregular or abnormal pregnancy present? Four varieties, determined by the seat occupied by the fecundated germ. 1st, Ovarian; 2d, Abdominal; 3d, Tubal; 4th, Mixed or interstitial pregnancy.

What changes take place in the genital system, after a fecundating copulation? The tubes which were erect during the copulation, continue so; the uterus participates in the general turgescence, and is prepared to undergo a new development for the accommodation of the ovum.

ALTERATIONS IN THE CERVIX AND OS UTERI.

What is the usual size of the neck of the uterus in the unimpregnated adult female? One inch long, half inch thick.

What size does it acquire during the first two months of pregnancy? It is somewhat thicker, and nearly two inches long.

How long does this development of the neck continue after the commencement of gestation? Until the fourth month.

When does it begin to shorten again? During the sixth.

How much shorter is it at the end of the sixth month? One-fourth.

How much at the end of the seventh month? One-half.

How much less at the end of the eighth month? Three-fourths.

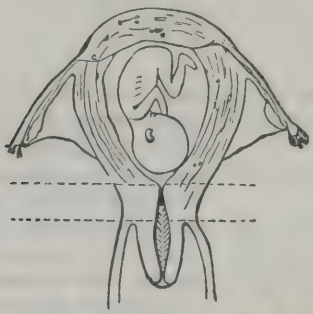
What is the state of the neck at the end of the ninth month? Nearly all expanded.

Is this a rule without exceptions? No, it is true in general, but cannot always be relied on as a positive sign of the advancement of pregnancy.

What minute description has Dr. Chailly, ex-Chief of the Obstetric Clinique of the Faculty of Paris, given on the changes which the uteri undergoes in the different months of gestation? In a work, the use of which was authorized by the Royal Council of Public Instruction, in France, he says, the transverse orifice of the primipara becomes circular about the end of the

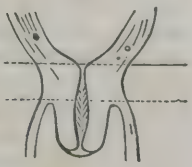
third month of pregnancy; it is regular in its contour and closed, the os tincæ is smooth and polished; the two lips are nearly on the same line, in consequence of the shortening of the anterior lip; the entire neck measures about two inches, as is shown in

Fig. 23.



in which and all the following diagrams, intended to illustrate this subject, (and which have been reduced to one-third of the natural size) the space between the transverse lines represents the super vaginal portion of the neckof the uterus.

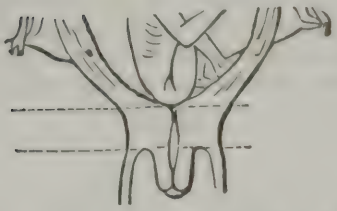
Fig. 24.



In the woman who has had children the orifice is also rounded, as in fig. 24, but it is irregular and presents a number of cicatrices especially on the left. It is sometimes open, and will admit the extremity of the finger. The neck is much larger than in the primip, it is also shorter, softer, and less smooth.

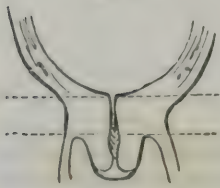
The changes in the vaginal portion of the uterus, after the end of the third month, do not exhibit such defined differences as to be readily appreciated; it is not until the end of the fifth month that marked alterations in this part of the uterus can be recognised. The diagram 25, representing the condition

Fig. 25.



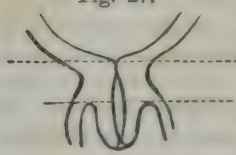
of the cervix in a primip, at the end of the fourth is not apparently changed from that at the end of the third month. The same may be said in comparison of the condition of the multipara at an equal period. Fig. 26.

Fig. 26.



At the end of the fifth month, the uterus being elevated above the superior strait, the finger, in seeking the neck, will have to pass higher up than at the previous period. The fundus being slightly inclined to the right and in front, the neck will of course be directed a little backward and to the left: the neck, in its totality, still measures from fifteen to eighteen lines, and this diminution of its length is effected at the expense of its vaginal portion only; the portion of the neck above the vagina, having undergone no diminution, which circumstance can sometimes be ascertained at this period by introducing a finger into the cul-de-sac of the vagina.

Fig. 27.

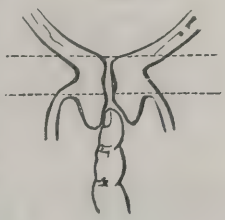


In primiparæ, the vaginal portion has preserved a certain regularity of its form: it is however softer, and the two lips are on a level; but the orifice is still closed. Fig. 27.

In women who have borne children, the neck is consi-

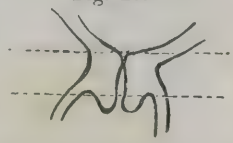
derably softer and shorter: the external orifice, which is irregular, begins to open, and will permit the introduction of half of the first phalanx of the fore-finger, and sometimes more, (see fig. 28.)

Fig. 28.



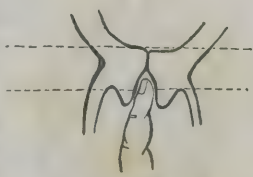
At the end of the sixth month, the vaginal portion of the uterus continues to soften, and diminish in length; the orifice also opens more and more; the first phalanx may be introduced in the os uteri, (as shown in fig. 29,) of the primip, in some few instances. In women who have borne children, the finger will penetrate to one half the neck, as may be seen in the diagram; it will occasionally even reach the internal orifice, but will not pass beyond it, (see fig. 30.)

Fig. 29.



At the end of the seventh month, the neck is carried far backward and to the left: it is sometimes difficult to reach, and measures in its whole length from twelve to fifteen lines. This dimension is effected at the expense of the vaginal portion only, which has become larger, and in primiparæ measures but a few lines; (fig. 31,) it is at this period almost completely effaced in women who have had children, (as represented in fig. 32.) In the primip, the vaginal orifice will sometimes allow the finger to penetrate to one half of the neck, while in the multiparous woman the finger can often reach to the internal orifice, into which indeed it may enter if the woman has had many children.

Fig. 30.



At the end of the eighth month the vaginal neck is almost entirely effaced: in primiparæ however, the lips still measure a few lines. It is directed considerably backward and to the left, and this circumstance renders it difficult to reach. This difficulty, however, depends more upon the anteversion of the body of the uterus than upon the height of the neck itself. In women who have borne a number of children the vaginal orifice is so soft and open that it becomes confounded with the walls of the vagina: and the only certainty that the accoucheur has that he has reached the neck is, that the finger penetrates an orifice widely open, in front of which is nothing more than the rudiment of the anterior lip. This orifice is found shaped, and the finger penetrates it deeply in order to pass the internal opening, which is more or less dilated, (fig. 33.) In primiparæ, the neck less soft and dilated, permits the finger to reach only as far as the internal orifice, (fig. 34, p. 65.) In women who have had children, there is no neck at the end of the ninth month. The internal and external orifices become confounded and are dilated so as to allow the finger to feel through the membranes the presenting part of the fetus, (fig.

Fig. 31.

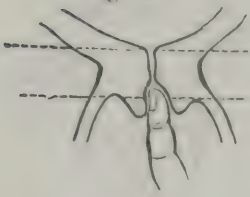


Fig. 32.

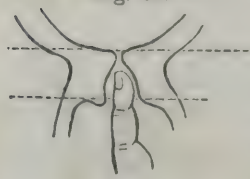
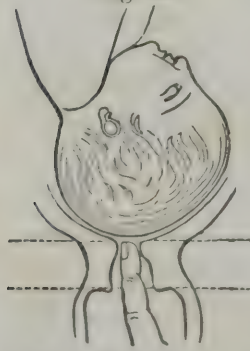
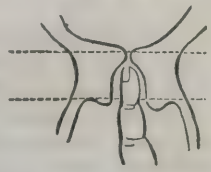


Fig. 33.



35.) In primips the supravaginal portion of the neck still preserves a few lines in length, which do not become effaced until after labor has commenced, the vaginal portion alone is completely obliterated; a very slight thickness of tissues separates the two orifices, the external is open, but the finger cannot enter the internal, (see fig. 36.)

Fig. 34.



Does Dr. Chailly mean, by his careful description of the state of the cervix, to establish the fact that it is easy to decide upon the positive existence of pregnancy in the early months? He candidly declares that, it is not always easy to distinguish the difference in the characters presented by the os uteri. Certain circumstances, as painful condition of the abdominal walls, tumefaction of the labia majora and sensibility of womb, will occasionally render it impossible to detect these signs. And again, if in their absence, it is at least, in a majority of cases, possible to deny the existence of pregnancy, yet we cannot always, when the signs are present, positively affirm that pregnancy exists; for at this period of gestation, as has already been observed, all that we can do is to ascertain that the uterus is enlarged; but whether this development depends on the presence of a fetus or upon an abnormal

Fig. 35.

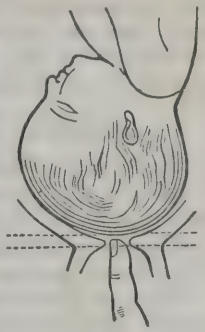
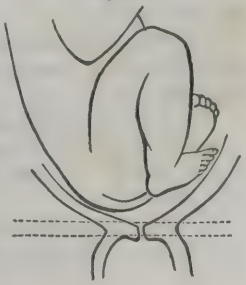


Fig. 36.



condition is a point possible it is true to establish in some instances; while in others the whole matter rests in doubt until additional symptoms render the diagnosis positive.

In fact, at the approach of the menstrual period of some women, the uterus in consequence of its congested condition, occasionally becomes as large as in the third month of pregnancy, and we are never liable to error, because in this case the neck is slightly softened and open. At other times the menses retained in the cavity of the uterus, in consequence of the closing of its internal orifice, distend, by their accumulation, the walls of this organ, and thus give rise, sympathetically, to many of the presumptive signs, such as tumefaction and pain in the breasts, disturbance in the digestive functions, &c., &c., circumstances which increase the chances of error.

HANGES IN THE FORM OF THE UTERUS.

What change takes place in the form of the uterus? It becomes more regularly pyriform, and even oviform.

What portions then become most rapidly developed? The anterior and posterior surfaces.

Which of these two surfaces developes the most rapidly? The posterior.

At what period of pregnancy does the body of the uterus become completely spherical? At the end of the fifth month.

Has the neck begun to shorten at this time? Yes, slightly; it is mammillated, being like a nipple on a mamma.

What is the original position of the uterus in its non-gravid state? It is situated in the axis of the superior strait, with its fundus just above the brim of the pelvis.

Does it descend a little during the first and second months? Yes—but chiefly because of its development.

Does it continue to bear the same relation with the axis of the pelvis as it is precipitated? It does.

Does this precipitation ever extend as far as to the vulva? Yes, in some rare cases.

Does its orifice then point forwards? It points forwards in the direction of the axis of the vagina.

Where is the fundus usually found at the third month of pregnancy? A little above the margin of the superior strait.

What is the situation of the uterus at the end of the fourth month? A large portion of it is out of the cavity of the pelvis.

How high is the top of the fundus at the end of the fifth month? Generally half way between the pubes and umbilicus of the mother.

How high at the end of the sixth month? On a level with the umbilicus.

How high at the end of seven months? Two or three fingers' breadth above the umbilicus.

How high at the end of the eighth month? It has reached the epigastric region.

Where is the fundus at the end of the ninth month? Usually rather lower than at the end of the eighth, in consequence of the rapid anterior development of the organ.

What relation does the gravid uterus hold with the intestines? It carries them upwards and backwards, being itself in contact with the parieties of the abdomen.

What are the dimensions of the uterus at the full period of utero-gestation? Twelve to fourteen inches from fundus to orifice, nine to ten in the widest part, and eight to nine antero-posteriorly.

Is the axis of the uterus liable to be modified by the pressure of the abdominal muscles? It is so, particularly in first pregnancies.

Does the tension of these muscles in a first pregnancy usually retain the axis of the uterus more nearly parallel with the axis of the body? Yes.

What other circumstances or causes, modify the direction of the axis of the uterus during gestation? The uterine ligaments, abdominal viscera, and spinal column.

Is the orifice of the uterus always directed to the portion of the pelvis opposite to that towards which the fundus presents? It is mostly nearly so, though sometimes it is rather posterior to this right line, and sometimes it appears to be retained upwards and backwards, in consequence of the want of development of the fibres of the posterior part of the cervix.

Is the orifice of the uterus sometimes thrown so far back into the hollow, or above the promontory of the sacrum, in cases of anterior obliquity as to be out of reach of the finger? When there is anterior obliquity it is always so.

Are the walls of the gravid uterus thicker than when in the unimpregnated state? Very slightly thicker.

What changes does the uterine parenchyma pass through in this development? It becomes softer, the muscular fibres are developed, the nerves, blood vessels, and lymphatics all increase in size.

By how many times are the blood-vessels enlarged? Arteries four times, and the veins even more than this.

What is meant by what are called *venous sinuses?* Enlargements and duplications of the veins merely, whose orifices are patulous upon the internal surfaces of the gravid uterus.

Is the sensibility or irritability of the uterus increased with gestation? It is so, and this is important to be borne in mind in the management of pregnant women.

ALTERATIONS OF SIZE AND POSITION OF THE PELVIC AND ABDOMINAL VISCERA CAUSED BY PREGNANCY.

Does the embryo enlarge the uterus by the irritation of its presence? It probably does, not however so much by mechanical distension, as by exciting the vital process of development, a result of irritation or

excitement caused by fecundation; as the ovum enlarges it keeps up the excitement within the uterus.

If the ovum be accidentally ruptured and discharged, is not the development of the uterus arrested? It is probably in all cases.

How is the vagina affected during the process of uterine developement? It becomes rather shorter during at least two months; and from the fourth month it becomes longer and larger.

How is the peritonæum, which is spread over the uterus and its appendages, enlarged during gestation? By development, and not mere stretching.

Do the fallopian tubes and ovaries remain vascular after conception? They do for some time.

How are they situated in reference to the uterus at the end of pregnancy? They hang alongside of this organ in the folds of the peritonæum.

Do the round ligaments assume a muscular character? They do—Velpeau says he has seen them contract during labor, and they often draw the uterus forward during pregnancy.

What effect has advanced pregnancy upon the urinary bladder? It is mostly carried upwards and forwards as the uterus enlarges.

What effect has this upon the situation of the urethra? It then becomes nearly perpendicular.

Where may you expect to find the meatus in this case? Drawn a little back from its usual situation.

How would you introduce the female catheter under these circumstances? By depressing the handle and carrying the point under the sub-pubic ligament.

Is the straight catheter always sufficient to pass into the cavity of the bladder? It is sometimes better to use the curved or male catheter, in consequence of the direction which the cavity is forced to take by the pressure of the uterus.

What effect does the pressure of the gravid uterus sometimes exert on the functions of the pelvic viscera?

It often causes obstructions to the natural functions of the bowels as well as bladder.

Is the rectum sometimes more free after the fourth month? Yes—but very frequently it is beyond the influence of the abdominal muscles, and hence is often the seat of great fecal accumulations.

In what manner are the respiratory organs affected during the latter months of pregnancy? During the eighth and part of the ninth month, the fundus of the uterus presses the diaphragm, liver, &c. upwards, and thus shortens the vertical diameter of the chest and expands its base.

What effect is sometimes produced by the distension of the skin of the abdomen? Sometimes its texture is modified, leaving resemblances to cicatrices.

Is the liability to crural hernia diminished as pregnancy advances? Yes, because the intestines are carried up above the abdominal rings, and their place is occupied by the uterus.

Is the woman more subject to umbilical hernia? Yes.

At what period of pregnancy does the navel pout out? About the fifth and sixth months.

Why does it flatten again after this? Because the fundus of the uterus rises above it.

Why are women during pregnancy particularly disposed to varicose veins, and to edema or anasarca? Because of pressure upon the vena cava and absorbents.

Does this varicose state of the limbs sometimes continue after delivery? Yes—and is then increased at every subsequent pregnancy.

While all these changes are going on externally, what is taking place in the cavity of the uterus? Its lining membrane becomes more developed, more villous and vascular.

DECIDUAL MEMBRANE OF THE UTERUS.

What is secreted by the lining of the uterus? A layer of coagulable lymph, gelatinous in character, which speedily becomes organized, vascular, and reddish.

What is this membrane called? Decidua or caduca.

How long does it remain next the uterus? During pregnancy.

When and how is it disengaged? At the time of parturition, when it is thrown off by uterine contractions at the same time with the placenta, or shortly after in small pieces with the lochia.

How low down the cavity of the uterus does this lining extend? To the internal os uteri.

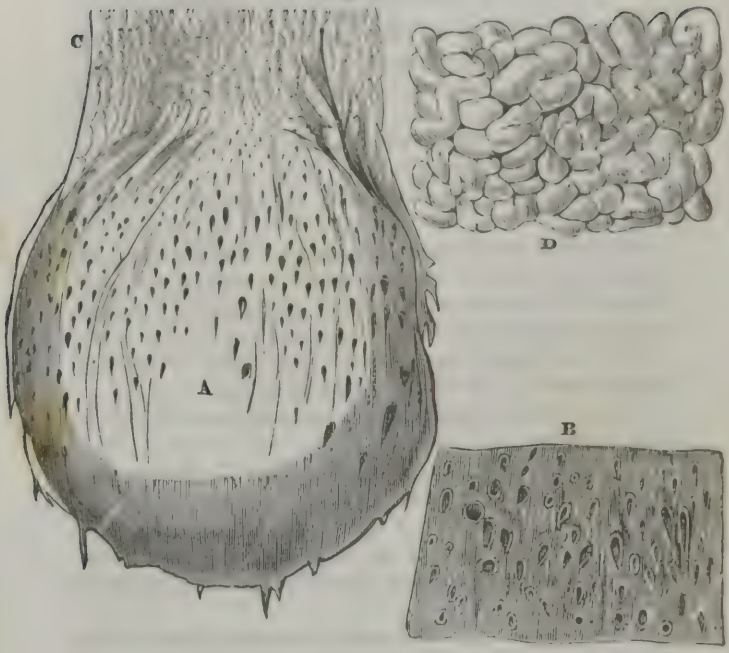
What is the character of its external surface? Villous or shaggy.

What does Velpeau call this membrane? *Anhistous*, and considers it unorganized.

What are the proofs of its organization? Its vascularity; it was injected by Ruysch, Burns, &c. The decidua of a cat has been injected by Drs. Goddard and Betton.

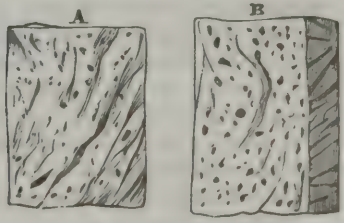
Is its growth or development another proof of its organization? Yes—it is also subject to diseases, and it becomes very thin towards the last, like serous or cellular tissue. A, the decidua reflexa, with a few of the smooth orifices of the canals passing between the cells of the chorion and decidual cavity—natural size. The opening had almost entirely closed in that part of the decidua reflexa which was most remote from the placenta, and the villi of the chorion had here also disappeared. B, the openings in the decidua reflexa, as seen through a simple lens of an inch focus. C, the inner surface of a small portion of the uterine decidua or decidua vera, unusually thick and rugous. D, a magnified view of the same membrane, with a few small orifices of vessels. Fig. 37, p. 72.

Fig. 37.



In figure 38 are represented the openings in the decidua reflexa and uterine decidua, as seen in another

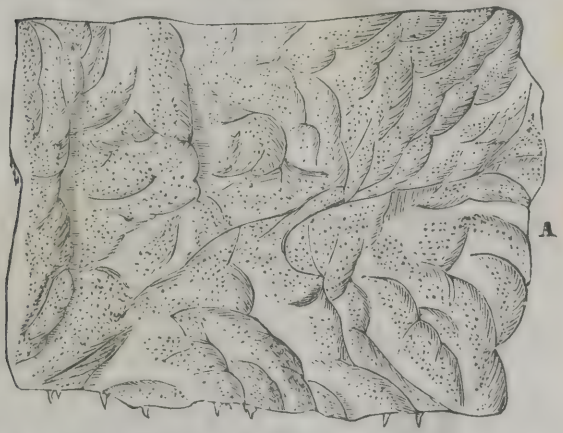
Fig. 38.



ovum of an earlier age. A, a small portion of decidua reflexa magnified. B, inner surface of uterine decidua, with the veins passing obliquely through the membrane to the uterine surface.

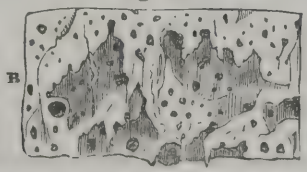
In fig. 39, the orifices of the veins of the uterine decidua opening into the decidual cavity: natural size.

Fig. 39.



In fig. 40, a portion of the same membrane, as seen through a good lens.

Fig. 40.



Is it a complete lining to the uterus? It lines the whole cavity of the body of the uterus, and by many

Fig. 41.



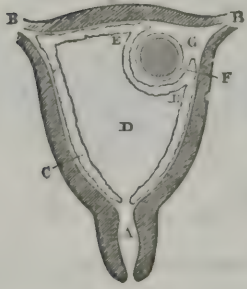
physiologists it is believed that it covers the orifice of the tubes and the internal os uteri, (fig. 41.)

What is the use of this decidua? It forms the medium of contact between the uterus and the ovum.

After how many days from fecundation does it line the cavity? Probably four, five, or six.

As the ovum cannot fall into the cavity of the uterus at its first approach to it, in what manner is it accommodated upon its arrival at the end of the fallopian tube? As it becomes developed it adheres to, and causes a growth of, that part of the membrana decidua, which is in contact with that angle of the uterus.

Fig. 42.



Does this action give rise to the apparent formation of two membranes? It has that effect, (fig. 42.)

DECIDUA UTERI AND DECIDUA REFLEXA.

What names have been given to these? That with which the ovum is in contact, is called the decidua reflexa, or decidua ovi; and that which is next the uterus, the decidua vera, or decidua uteri.

Does this arrangement correspond with that of the pleura pulmonalis, and the pleura costalis? It does, for like the lungs, the ovule is thus really exterior to the sack of decidua, though apparently enclosed by it.

Are the two layers of the decidua, viz.: decidua re-

flexa, and decidua vera at once in close contact with each other? No, one is closely attached to the ovum, while the other is loose around it.

What is interposed between the two layers? The interspace is filled with fluid.

At about what period of pregnancy do these two layers come in contact? About the fourth month.

CONSTITUTION OF THE OVUM.

What is the arrangement of the ovule in reference to its investments? It has two membranes; the chorion externally, and the amnion internally, surrounding it.

Are these membranes endowed with vitality? They are.

What does the inner membrane contain? A fluid in which is suspended a corpuscle, or cicatricula.

What is the probable size of the ovum at the time of its entrance into the uterus from the fallopian tube? It is supposed to be about the size of a hemp seed.

What length of time does it probably require for the ovule to pass along the tube from the ovary to the uterus? A week, or a little more.

Does any portion of the shaggy surface of the chorion come in contact with the uterus? No, for the two layers of the caduca or decidua are interposed.

How, then, does the ovum derive its support from the uterus? The decidua receives the blood from the uterus, and transmits it to the ovum through the shaggy surface or the radicles of the chorion.

What are the anatomical characters of the chorion? It is a serous or white membrane, and does not carry red blood; its internal surface is smooth, but externally it is villous or shaggy; its little flocculi being like so many radicles.

Are these radicles vessels? Some physiologists consider that they are vascular, and others regard

them as areolar spongioles, and not permeable conduits.

Does the chorion increase in thickness and strength as it becomes developed? It is believed that it does at the same time that the decidua becomes thinner.

Does the chorion form the basis of the placenta? This point is not well settled, though in the opinion of Rigby, Hodge, Dewees, and some others, it does.

What are the characteristics of the amnion? It is a delicate small sac situated within the chorion.

Is it different in any respect from the chorion? Yes; it is smooth and transparent, though it is slightly adherent in places to the chorion by means of mucous filaments or lamellæ which covers its outer surface.

What fluid does it enclose? The liquor amnii.

Is the amnion originally in contact with the chorion throughout? No; originally it is smaller than the chorion.

What is interposed between the two membranes? A kind of vitriform substance, enclosed in a delicate reticulated sac.

At about what period of gestation does the amnion come in contact with the chorion? After the second month; though agreeably to Velpeau there is much difference in different individuals, in this respect. In some cases it is known to have a considerable amount of fluid between it and the amnion at the full term of gestation, the escape of which has led to the idea that the liquor amnii had passed off.

Is the amnion a stronger membrane than the chorion? It is usually much stronger.

What is the character of the liquor amnii? It is peculiar; unctuous, and rather more consistent than pure water; has also rather greater specific gravity.

What circumstances may modify its color and odor? The excretions from the fetus.

What is the relative quantity of the fluid during the

whole period of gestation? At first it forms but a thin stratum, but it increases rapidly till the second month. At three months it weighs more than the fetus. After this period the quantity of the fluid relatively diminishes.

What is the quantity usually present at birth of the fetus? A pint; sometimes quarts, and in a few rare cases even gallons.

Does this increased quantity appear to exert any influence on the health of the child? It usually produces no manifest effect.

What appear to be the uses of this fluid? Although its intrinsic use is not known, it is evidently adapted to allow space and facilities for motion, development, &c., of the fetus.

May the presence and increase of the liquor amnii be regarded as a concentric stimulus to the development of the uterus? This opinion is entertained by some highly respectable authority.

Is the liquor amnii subject to any changes in color and quality? It is modified in this respect by various causes; as diseases, &c.

What does Velpeau suppose to be located between the amnion and chorion, until they are approximated by the developement of the amnion? The reticulated tissue, containing a sort of vitreous humor. He calls it the reticulated body, which after the chorion and amnion come together, corresponds to the allantois of inferior animals.

What is Muller's description and magnified drawing of an ovum which he supposed to be about twenty-eight days old? A, fig. 43, the natural size. B, fig. 44, the magnified view. C, fig. 45, a view still more highly magnified, with the membranes restored, and references to the several parts. *a*, *a*, chorion laid open and reflected; *b*, *b*, *b*, albuminous space betwixt the amnion and chorion; *c*, amnion; *d*, umbilical vesicle; d^1, pedicle of the umbilical vesicle; *e*, noose of intestine communicating with d^1; *g*, heart; *h*, lower jaw; *i*, ear; *k*, cerebel-

lum; k^1, hemispheres; k^2, corpora quadrigemina; l, anterior, and, m, posterior extremity; n, point where

Fig. 43.

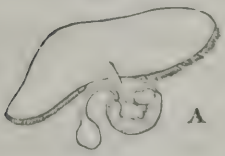


Fig. 44.

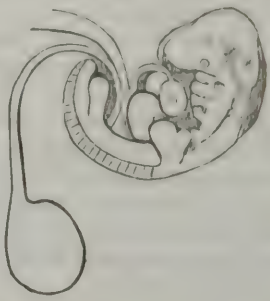
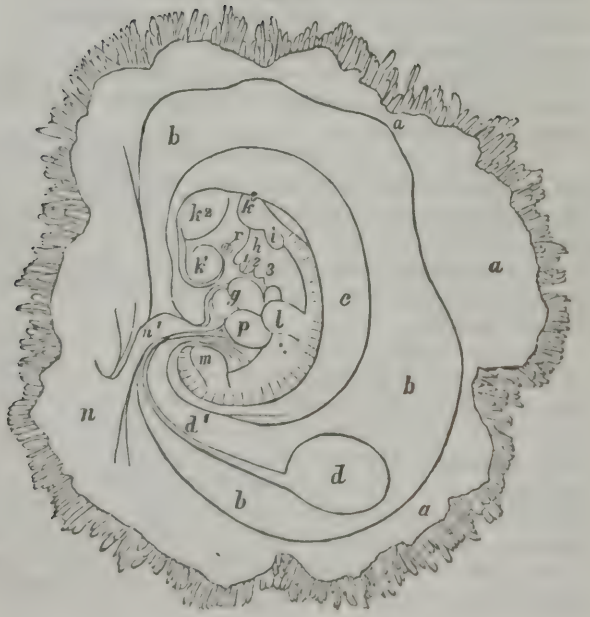


Fig. 45.



the allantois and chorion have coalesced ; n^1, umbilical cord ; p, liver ; r, eye ; 1, 2, 3, branchial fissures.

How does Professor Meigs describe the allantois ? "This is a small vesicle or bladder, which rises from the pelvic extremity of the embryo, and springing forwards from the still open belly proceeds to place itself betwixt the outer chorion and the inner amnion, enlarging itself and at length attaching itself to the chorion, carrying with it the blood-vessels which create it, and which are umbilical arteries which it applies by their distal extremities to the inner aspect of the chorion. This chorion they pierce and go through to seek an attachment as placental tufts, on the inner wall of the womb. This bladder is the allantois. When the belly of the embryo becomes closed in, this bladder becomes strictured at the navel, and in the tractus of the umbilical cord. The narrow strictured part of the vesicle is now a long cylindrical tube. The part retained within the now closed abdomen is the bladder of urine ; the long cylindrical part is the urachus, and the outer expanded, or to speak correctly, uncompressed and unstrictured portion is the allantois."

What is his opinion of the uses of the allantois or sausage-shaped vesicle ? "The urine secreted in the kidney passes by the ureters into the bladder of urine, and in the early stages of uterine life flows through the urachus into the bag of the allantois."

What is the vesicula alba or umbilical vesicle ? Dr. Meigs, who has given a more full account than any other American writer, of what is known of the changes of the ovum early after impregnation, after reminding his reader that the human yelk is microscopic globule filled with vitellary corpuscles, says, "When the blastoderm has partly undergone the morphological changes that convert it into the earliest rudimental embryon, part of the yelk corpuscles still remain unappropriated ; and as they are still contained in their original vitelline membrane, they

Fig. 46.



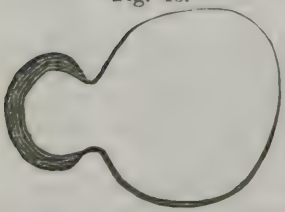
constitute a small but visible "ball, called the umbilical vesicle." He illustrates this statement by the accompanying diagrams. Originally the vitellus was a sphere, of which fig. 46 represents a segment. The blastoderm is developed upon a segment of this sphere as in fig. 47. When the blastoderm doubles or folds its edges inwards it pinches a portion of the vitellary ball as in fig. 48. In a still farther progress as may be shown by fig. 49, the portion of the vitellary ball that remains outside of the embryon is connected with the embryo by a delicate tube or vitellary duct."

Fig. 47.



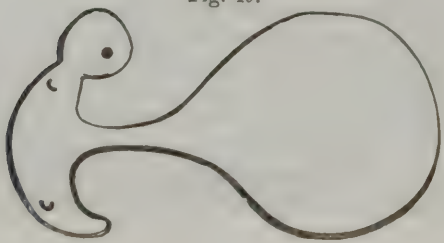
Into what portion of the intestines does it open? Velpeau says it comes from the ileum; Oker, Rigby and Ludlow consider the appendicula vermiformis as the remains of it.

Fig. 48.



Is it situated between the chorion and amnion? Some teachers think it is outside of the chorion. Velpeau says it is between the chorion and amnion.

Fig. 49.



How is it composed? It consists of two, perhaps of three membranous layers.

What appears to be its use? To supply the embryo with nutriment during the early periods of its development, and until the placental circulation is established.

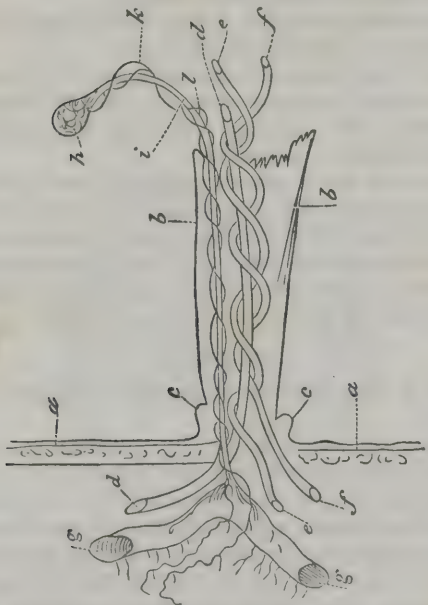
At what time does it totally disappear? By the end of the third or fourth month of gestation.

Are there any blood-vessels distributed through it? Yes; both arterial and venous.

What are these called? Vitello-mesenteric, or omphalo-mesenteric vessels.

How does Professor Meigs describe and illustrate

Fig. 50.



the omphalo-mesenteric vessels and cord? "In perfect ova, averted at the period of two months, or a little later, the student will readily distinguish the um-

bilical vesicle shining through the chorion and lying betwixt it and the delicate amniotic membrane. I add here a figure that may serve to explain its arrangement. Let *a*, *a*, fig. 50, be a portion of the abdomen and the embryo, and *c*, *c*, the navel or umbilical ring; *b*, *b*, the navel string or cord laid open; *d*, the umbilical vein bringing back the blood from the placenta and passing into the belly at the ring to go to the liver; *e*, *f*, the two umbilical arteries of the fetus; *h*, the umbilical vesicle or vitelline sac, whose pipe conduit or efferent-duct runs along the umbilical cord to the navel, and passing into the belly empties itself in the ileum; *g*, *g*, which bends up to receive the discharge; *k*, *l*, represents the omphalo-mesenteric vessels."

By what means is the embryo connected with the membranes? By the umbilical cord.

What is the composition of this cord? It consists of two arteries and one vein, of a layer of amnion, and perhaps also chorion, with some albuminous or gelatinous matter interposed.

Whence do these vessels originate, and in what do they terminate? The arteries are continuations of the primitive iliacs, while the vein goes to pass under the edge of the liver and enter the cava. They terminate in a great number of branches at the circumference of the ovum, upon a portion of the chorion.

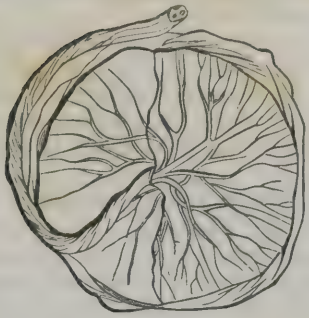
PLACENTA.

What is this congeries of vascular radicles called? Placenta.

What is the usual size of the placenta at the full period of utero gestation? Its diameter is from six to eight inches; its circumference, from eighteen to twenty-four inches; and its thickness from a few lines at the circumference to an inch or two in its centre.

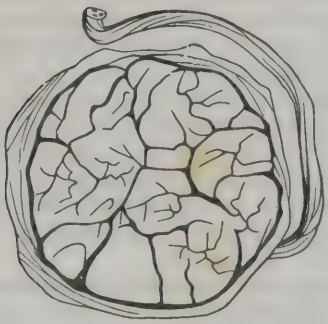
What is the character of its inner or fetal surface? It is smooth, lined with the amnion, through which the larger vessels of the placenta can be felt and seen. Fig. 51

Fig. 51.



What arrangement exists on its external or uterine surface? It is arranged in convolutions or sulci, which are distributed in masses, sometimes called placentules. Fig. 52.

Fig. 52.



Is there any membrane thrown across the uterine surface of the placenta? The decidua is believed by many physiologists to extend over its whole surface.

Can the amnion be removed from the inner surface of the placenta? It can be readily peeled off from the inner surface.

Is the chorion more firmly attached to it? It is almost inseparably so.

What is the mode of communication between the embryo and uterus during the first week of its uterine existence? Through the membranes entirely. The decidua receives blood from the uterus, transmits the elements of nutrition, through the fetal membranes to the embryo.

What is Professor Hodge's theory of the mode of formation of the placenta? "The shaggy surface of the chorion enlarges at the point at which the ovule happens to come in contact with it, and at that point the placenta is formed, chiefly out of the shaggy surface of the chorion, and also of the decidua, which may be regarded as the uterine portion of the placenta."

What is the composition of the placenta? Its tissue is peculiar; it is somewhat cellular, but is made up chiefly of ramifications of the cord.

Is this susceptible of proof by injection? The tissue of the placenta may be distended by injecting the arteries, and when these vessels are filled, the fluid passes out by the vein.

Is it proper to consider the placenta as composed of two parts, the fetal, and the uterine portions? It will admit of that mode of demonstration, particularly during the early part of pregnancy.

What are these two portions? One, the fetal, is composed of the chorion, and the other, the uterine, is derived from the decidua.

Can these portions be readily separated from each other? The process can be effected by maceration, as late as the second month of pregnancy.

Do any large blood vessels pass from the uterus into the placenta? No: the communication between the uterus and the decidua, is by capillary veins and arteries only.

What are the proofs of this? The decidua may be

injected from the uterus during the early periods of pregnancy.

How many kinds of circulation are carried on in the placenta? Two; one through the very minute utero-placental vessels for the purpose of sustaining the vitality and nutrition of the placenta; the minute vessels extending from the substance of the uterus into the placenta; and the other, a large circulation, through the vessels of which the placenta is chiefly composed; the blood coming from and returning to the fetus, in a manner analogous to that in which a small supply of blood is sent to the substance of the lungs for their nutrition, while the whole mass which is to be sent over the body, is passed through the great vessels of the lungs, during extra uterine life.

What becomes of the blood of the fetus, after it has been carried out through the umbilical arteries? It returns to the fetus through the umbilical vein.

Do the uterine veins increase in size as they approach the placenta? They usually increase very greatly.

Do they open directly into the placenta? No; they open upon the decidua by patulous orifices—this membrane therefore acts like a valve over them, to prevent the blood from escaping into the cavity of the gravid uterus.

What is the proof of the arrangement? The fact that if the placenta be separated before the uterus contracts, more or less venous hemorrhage occurs as a consequence.

What were Lee's observations in reference to this vascular arrangement? "If air be forcibly thrown into either the spermatic arteries or veins, the whole inner membrane of the uterus is raised by it; but none of the air passes across the deciduous membrane into the placenta, nor does it escape from the semilunar openings in the inner membrane of the uterus, until the attachment of the deciduous membrane to the uterus is destroyed. There are no openings in the

deciduous membrane corresponding with the valvular apertures in the internal membrane of the uterus."

Upon which individual, mother or child, does the placenta depend for its organic vitality? Upon the mother.

What proofs have we of this? First, the fact that if the placenta be separated from the uterus, it becomes atrophied. Secondly, the placenta may become diseased; it may become inflamed, and subsequently adherent to the uterus. Thirdly, the placenta may sometimes be kept alive after the death of the fetus.

To what changes is it mostly subjected under such circumstances? It generally becomes carneous and somewhat shrivelled, in consequence of the failure of the fetal circulation through it.

Is the placenta very easily separated from the internal surface of the uterus when it is in a healthy state? It is—by passing up the fingers between the uterus and placenta, it may be very easily separated. Slight jars, shocks, and any thing which excites uterine contraction, may be a means of causing a separation of the placenta, and giving rise to uterine hemorrhage.

To what part of the uterus is the placenta mostly attached? According to the experience of some, mostly to one of the sides of the uterus.

Are there any nerves in the placenta? None have yet been satisfactorily discovered.

Is this mass supplied with lymphatics? It is believed by many that they exist in this body in considerable amount.

What is the length of the cord at the end of the third or fourth week? Half an inch. Velpeau, however, says he has mostly found the cord about the length of the embryo or fetus, throughout every period of gestation at which he has been able to dissect it. During the very early period it appears like a gelatinous bag.

What is the usual length of the umbilical cord of the child at term? About eighteen or twenty inches, though it is sometimes much longer or much shorter than this.

What inconveniences are liable to result from the cord being much longer than this? It is then apt to become tied into knots by the various movements of the fetus. It is also liable to become prolapsed during labor when of greater length than that mentioned.

What are some of the consequences of too short a cord? Delivery may be retarded, or the placenta may be pulled down, and hemorrhage follow, or the uterus may be inverted.

Have the vessels of the umbilical cord any valves? No; an injection passed into the arteries will return by the veins, and vice versa.

Is the cord composed of these three vessels only? No; it has also a greater or less amount of gelatinous matter in it.

When you take hold of the umbilical cord, how many tissues are between your fingers? Amnion, chorion, and the two arteries and one vein.

Is the chorion very intimately attached to the cord? Yes, it appears almost inseparable from the reticulated tissue which contains the vessels and the gelatine.

Is the cord capable of bearing much force applied to it? It sometimes is broken by the weight of the child at birth; but occasionally it possesses great strength.

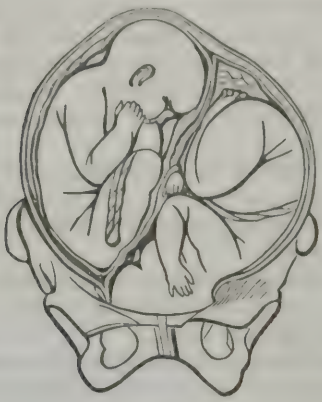
What is the arrangement of the membrane in case of twins? Each embryo has its own membranes and its own placenta, (see fig. 53.)

In cases of twin ova, when an ovule is conveyed into the uterus by each fallopian tube, how many membranes are interposed between each fetus? Six—amnion, chorion, decidua, decidua, chorion and amnion.

What number in case the two ovules pass down

one fallopian tube? Then there are probably but four, viz.—amnion, chorion, chorion and amnion.

Fig. 53.



SUPERFETATION.

What opinions are entertained by most physiologists respecting superfetation, admitting the theory of generation, now generally believed in, to be correct? That it would be impossible for impregnation to take place, after the uterus becomes occupied by a decidua, and perhaps also an ovum.

How are the facts, however, of women giving birth to two or more children at once, of different sizes, and apparently of different ages, to be accounted for? Upon the idea that originally it was a twin pregnancy, but that some cause had suspended the development of one of the fetuses.

What is the probable explanation when the fetuses are born at different periods, and well developed? That there has been a double uterus, one of which contained the ovum first fecundated, and the other the second.

What in case of the delivery at the same time of

two children, one white and the other black? That the woman had been the subject of two fecundating copulations in quick succession by men, one white, and the other black.

May not superfetation take place in cases of pre-existing extra-uterine pregnancy? It may, indeed, at any time when the uterine cavity is not filled with any substance, and so long as the tubes are open.

EMBRYO.

How long does the new being retain the name of *embryo?* During the first, second, and third months of gestation; for up to this period its formation is incomplete.

What is the earliest period at which an embryo can be seen within its investments? About the tenth day, and then only by the aid of a magnifying glass.

What does it appear to be at this time? A mere amorphous vesicle.

Does it quickly undergo considerable changes? It soon enlarges, and presents two bodies or vesicles attached to each other.

Of what are these two bodies the elements? The head and body of the future fetus.

Which of these two bodies or vesicles is the head? The larger of the two.

What does the embryo resemble in the next or second degree of its development? A kidney-bean, or a grub-worm or maggot curved upon itself.

What probably is first developed in the embryo? Some think the spine and the heart.

What recent English writer on obstetricy, who, like Professor Meigs in this country, has enriched his work by clear illustrations of the manner in which physiologists have observed the early development of the embryo? Dr. Edward Rigby.

What is the mode of addition of the different parts of the embryo, to constitute the fetus? Professor

Hodge and some others think it is by super-addition, pullutation or generation, and not by evolution, or unfolding. We are ourselves, however, inclined to believe in the latter mode of development.

From what part of the curved embryo is this generation carried on? From the concave, and never the convex surface.

What is the general order of succession in this process of pullutation or generation of parts; admitting this idea to be correct? First the features appear, though rather indistinctly; then the roots of the upper extremities, then the coccyx, and then the lower extremities.

Which portion of the limbs appears first? The arm and thigh, or the fore-arm and leg, &c. According to those who believe in pullutation, the arm and thigh, and not the fore-arm and leg, with the hand and foot, as Velpeau has it.

FETUS.

Does the embryo change its name at the end of three months? Yes; it is then called fetus.

What is the extent of its development at this time? The teguments are distinct, though very soft and rose-colored; the head is still proportionately very large, the nose prominent, though both the mouth and eyelids remain closed: the osseous system begins to be observable, through the gelatinoid coverings, and the digits of the extremities are quite distinct, and even exhibit a surface for the future nail; the intestines are also included in the abdominal varieties.

What is the length of the head and body of the fetus at this time? From vertex to coccyx, it measures about three inches.

At about what period of gestation, does the muscular system become sufficiently developed, to exert the power of motion? From the middle to the end of the fourth month.

VIABILITY OF THE FETUS.

What is to be understood by the expression, *the viability of the fetus?* That the fetus, which has hitherto enjoyed only a sort of vegetable life in utero, is now sufficiently developed to admit of living independently of the uterus, or in other words, to enjoy extra uterine and animal life.

At what period of fetal existence does this viability occur? At about the end of the sixth month.

Are fetuses very likely to live when born at the end of the seventh month? It is the experience of some that they rarely live.

Are children, born at the end of the eighth month less likely to live, than those born at the seventh month? Professor Hodge thinks not, though that opinion was entertained by Professor James.

What is the condition of the eye of a fetus at seven months? It has been supposed that from the fourth to the seventh month, the eye was closed by what was called the membrana pupillaris. That at this time the membrane bursts, and that vision becomes possible to the child born at this time.

What is Velpeau's view of this condition of the eye? He appears to think that the iris is not *developed* until the seventh month, that it originates at first as a simple ring, which grows concentrically so as at last to leave the opening commonly called the pupil of the eye.

FETAL ELLIPSE.

In what manner is the fetus usually situated in the cavity of the uterus, at the full period of gestation? Its general form is that of an ellipse, its limbs crossed and flexed in front of the abdomen.

What is the long diameter of this ellipse? From vertex to coccyx.

What is its measurement? About twelve inches.

WEIGHT OF THE FETUS.

What is the average weight of a fetus at term? From seven to eight pounds; perhaps seven pounds for the male, and six for the female child. In Philadelphia, Dr. Hodge weighed one thirteen and a quarter pounds; and Dr. Condie one, fifteen pounds nine ounces.

What was about the greatest weight noted by Madame Lachapelle, in four thousand cases? Less than twelve pounds.

In twin cases, are each of the children as large as in single pregnancy? No, each fetus is usually smaller, but the sum of the twins is greater than in a single pregnancy.

POSITION OF UMBILICUS.

Is there any difference at different periods as to the point of insertion of the umbilical cord? In the early part of fetal existence the cord is inserted near the pelvis, but this point becomes more remote as the body becomes developed.

Where is the umbilical cord situated at term? About half way between the pubes and ensiform cartilage.

Do the viscera of the fetus bear the same relation of size to each other as those of the adult? No—the liver is much larger—the lungs smaller and dense, they are very slightly if at all porous or crepitous.

THYMUS GLAND.

Is there any structure in the fetus which is peculiar to it, and useless to extra uterine life? Yes—the thymus gland.

Where is it situated? In the anterior portion of the superior mediastinum.

How many lobes has it? Two, but no excretory duct.

Does it remain developed long after birth? No—it diminishes rapidly after the extra uterine functions become established.

What is the object of the gland? Its uses are not known.

FETAL HEART—CIRCULATION.

Is there any peculiarity in the fetal heart? It is like a single heart, both auricles receiving blood from the veins, and both ventricles simultaneously propelling it into the arteries.

Is the septum between the ventricles complete at term? Yes—but it is imperfect between the auricles.

What is the name of the orifice between the two auricles? Foramen ovale, or foramen of Botal.

Is there any valve-like formation connected with it? Yes, there is an arrangement of this kind situated on the left side of the foramen ovale.

How does the blood from the placenta get into the fetal heart? It enters the umbilicus of the fetus through the umbilical vein, which passes up under the edge of the liver, where it empties into the left branch of the sinus venæ portarum, giving off several branches to the liver. Some portion of the blood then passes along what is called the ductus venosus, into the left hepatic vein, which runs into the ascending vena cava. The blood then mixed with that in the cava, is carried up the cava until it reaches the eustachian valve, which directs a large portion of it through the foramen ovale into the left auricle, at the same time that the right auricle receives the blood which comes down from the descending cava.

How is the blood disposed of, after it has been thus carried into the heart? The two ventricles, supplied with blood at the same instant from each auricle, now contract and force blood along the pulmonary artery and aorta.

Is the pulmonary artery well developed during fetal life? It is adapted only to carry blood sufficient to nourish the lungs, but it is not large enough to carry all the blood of the general circulation.

What route is presented as a substitute for the pul

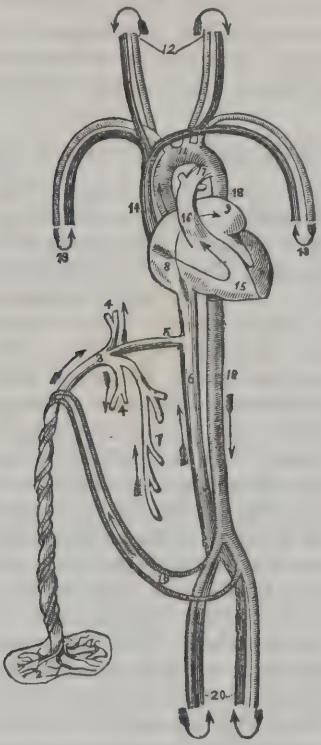
monary circulation? A short duct is given off from the pulmonary artery to the aorta a little below its arch.

What is this vessel called? The ductus arteriosus.

How then is the fetal blood carried back to the placenta? That which is forced out of the right ventricle is carried through the ductus arteriosus. That from the left ventricle passes the usual route of the arch of the aorta. At the point of insertion of the ductus arteriosus, the blood from the two ventricles continues to pass through the aorta as low as the iliac arteries, which give off branches; which under the name of internal iliacs, turn upwards, one on each side of the bladder and pass out at the umbilicus and proceed to the placenta, under the name of the umbilical arteries. At the same time, a sufficient quantity is carried along the primitive iliacs to nourish the lower extremities. Fig. 54 is a diagram by Drs. Neill and Smith, representing the fetal circulation, which is thus described: (1) the umbilical cord, consisting of the umbilical vein and two umbilical arteries, proceeding from (2) the placenta; (3) the umbilical vein dividing into three branches; two of which (4) (4), to be distributed to the liver; and one, (5) the ductus venosus, which enters (6) the inferior vena cava; (7) the portal vein, returning the blood from the intestines, and uniting with the right hepatic branch; (8) the right auricle; the course of the blood is denoted by the arrow, proceeding from (8) to (9) the left auricle; (10) the left venticle, the blood following the arrow to (11) the arch of the aorta, to be distributed through the branches given off from the arch of the aorta to the head and upper extremities. The arrows (12) and (13) represent the return of the blood from the head and upper extremities through the jugular and sub-clavian veins to (24) the superior vena cava to (8) the right auricle, and in the course of the arrow, through (15) the right ventricle to (16) the pulmonary artery; (17) represents the ductus arteriosus, which appears to be a proper continuation of

the pulmonary artery; the off-set on each side are the initials of the right and left pulmonary artery; these vessels being of extremely small size when compared

Fig. 54.



with the ductus arteriosus. The ductus arteriosus joins (18, 18) the descending aorta, which farther down divides into the common iliacs, which become (19) the umbilical arteries, and return the blood along the

umbilical cord to the placenta, while the other divisions (20) the external iliacs are continued to the lower extremities. The arrows at the termination of these vessels mark the return of the venous blood by the veins to the inferior cava.

Is the circulation of the fetus carried on within, or without the cavity of its peritonæum? Outside of it at all points. This large membranous sac covers the inner and lateral portions only of the circulatory apparatus.

CHANGES IN THE MODE OF CIRCULATION AFTER BIRTH.

What changes take place in this circulation, after the birth of the child? The air rushes into the lungs, upon the effort to respire; the column of blood, which before passed along the ductus arteriosus from the right ventricle, now passes along the pulmonary artery, into the lungs; thence it returns through the pulmonary vein, into the left auricle. The effect of this is to render the ductus arteriosus useless, and it consequently becomes filled with a coagulum. The current of blood coursing from the lungs through the left auricle, closes down the valvular formation on the left side of the foramen of Botal or the foramen ovale, and thus cuts off the direct connection, which heretofore had existed between the right and left auricles. From this moment, the action of the heart becomes double; that is, the right auricle and right ventricle, act as it were independently of the left auricle, and left ventricle. The lungs now performing the function of æration, or decarbonization of the blood, the placental circulation becomes no longer necessary, and the ductus venosus is obliterated.

What becomes of the vessels which were peculiar to the fetus? Upon the establishment of the extra-uterine circulation, they become first obliterated by coagula, and then either remain in the character of ligaments, or are entirely absorbed.

PHYSIOLOGICAL CHARACTERS OF THE FETUS.

What are the physiological characters of the fetus? While yet an embryo, it grows, is nourished, and it has fluids to sustain it. It is endowed with vitality from the period of its detachment from the ovary.

Does it form its own blood? It does.

What is the color of the fluid which it first circulates? White.

How small an amount of red blood can be seen about the heart, while the embryo is in a transparent or translucent state? A mere drop or two, about the region of the heart.

Is the blood of the fetus exactly like that of the mother? No, it is peculiar; its color is between that of maternal, arterial, and venous blood; it is said to resemble the menstrual fluid.

Is its consistence as firm as that of adult blood? No; its coagulum is softer, its red globules are smaller.

Does it contain so large a portion of phosphoric salts? It does not.

If the fetus then forms and circulates its own blood, does it not require a relatively greater force to propel it through the placenta and umbilical vessels? Yes, and hence the simultaneous action of the two ventricles to carry the blood with double force.

Does the blood of the mother circulate at all through the fetal vessels? No; it is probable that the decidua receives blood from the uterus, but returns it again to that organ without transmitting it to the other portions of the placenta, at least not more than to supply it with nutriment.

Would the circulation of the mother, be too strong for that of the embryo or fetus? Yes, it is highly probable that it would destroy it by the momentum with which the blood would be impelled into it if there were a direct communication between the mother and fetus.

What proofs have we, that the maternal blood is not circulated in the fetus? 1. Injections cannot pass from the vessels of the mother into those of the fetus; nor if the vessels of the fetus be injected, can the matter of injection be conveyed through the placenta into the vessels of the uterus, at least not without previous lesion of structure. 2. If after the birth of the child, the umbilical cord be cut, there is no continuous hemorrhage from the placental extremity of it,—only a part of the blood it had contained, is squeezed out by contraction of the uterus. 3. The fetus cannot be poisoned through the mother. The child may die from rupture of the cord, without the mother being affected. 4. The entire ovum has been thrown off by the uterus, and when deposited in warm water, has been known to live many minutes, perhaps an hour; its circulation going on without any effusion of blood.

What effect does hemorrhage from the mother, have upon the fetus? None, whatever, directly; the woman may suddenly die from very profuse hemorrhage, and yet the child will survive some time;—if however, she be exhausted by constant discharge, the fetus will suffer much thus, and fail to become well developed, even though the mother may survive.

Is the circulation of the fetus more rapid than that of the mother? It is; the motions of the heart have been determined by the stethoscope to be nearly or quite twice as frequent as those of the mother's heart.

What part of the fetus receives pure placental blood? The left side of the liver only, because every other portion has the blood from the fetal veins mixed with it.

What is the proportion in which the different organs receive the placental blood? This has not yet been satisfactorily ascertained; it may be proposed as a matter of interesting calculation.

Why are the upper parts of the fetus better developed than the lower extremities? Because more

blood is carried through the carotids and sub-clavians, than through the lower branches of the aorta.

Is more pure blood carried into the left than into the right ventricle? In consequence of the arrangement of the eustachian valve, blood which is brought from the placenta, mingled, it is true, with a part of the blood in the portal circulation, is thrown into the left auricle through the foramen of Botal. From this ventricle it is thrown into the arterial branches of the aorta, which go to supply the head and upper extremities, while the blood in the right ventricle is thrown out into the root of the pulmonary artery, and thence through the ductus arteriosus into the aorta, below the branches which supply the upper portions of the body. The right ventricle receives from the aorta the blood of the vena cava descendens.

What is the apparent object of the placenta? To afford the changes necessary in the blood for the nutriment and development of the fetus.

What changes are probably effected in the placenta? Those similar to that effected in the lungs by respiration, in other words, hematosis.

Is it probable that oxygen is eliminated in the placenta and transmitted to the blood through its tissue? A supply of oxygen is necessary to hematosis. It is indispensable to all animals, to the chick in ovo, &c.

Is there any difference of color in the blood circulating in the vessels of the fetus? It is redder in the arteries than veins, although the difference is not so great as in the adult.

How does pressure upon the cord cause the death of the fetus? By interrupting the process of hematosis, and not by suspending the circulation merely, because this may go on, to some extent at least, in the fetus independently of a cord or placenta, or when these are compressed.

Is it probable that the fluid in which the fetus is suspended affords it any nutriment? This is an un

settled question. Professor Hodge and some others think not. They suppose that the placenta is in some manner the medium of nutriment.

ANIMAL LIFE OF FETUS DORMANT.

Has the fetus any of the functions of animal life? Its faculties are dormant; although the different organs of this kind of life are developed in succession—as ears, eyes, nose, &c., yet it is doubtful whether they are brought into exercise during intra-uterine life.

What is the condition of the cerebrum, during the latter part at least of fetal life? The brain is soft and less consistent at birth than afterwards.

Does the brain appear to be of any physiological importance to the fetus? No: some children have been born without any brain, and yet had all the other organs developed.

Is it probable that the fetus has sensation while in utero? Of the touch or tact only; and it most likely does not suffer from ordinary compression during parturition, as it is then probably comatose.

Does it probably suffer under severe obstetric operations upon it? It is probable that it does suffer from such causes, since under such processes the pressure is usually less uniform than that effected by the contractions of the uterus.

Is there any probability that the child may cry in utero? Not the least, unless probably when the mouth of the child can come in contact with the atmospheric air.

OSSEOUS SYSTEM OF THE FETUS.

What is the general condition of the osseous system of the fetus? The middle portions of the bodies of the bones are usually pretty well developed, though somewhat flexible, while the extremities are still cartilaginous and very pliant.

What advantages result from this circumstance in

practice? A greater degree of flexibility of the child, both during labor, and for a short time after its birth.

DIMENSIONS OF SKELETON.

What is the usual length of a fetus at term? From eighteen to twenty-two inches.

What is the distance from the tip of one acromion process to that of the other? Four or more inches.

May this diameter be diminished without danger? It may be diminished an inch or more without hazard to the child, as it passes through the pelvis.

What is the antero-posterior, or dorso-thoracic diameter of the child? Three and a half or four inches—but it may be reduced to two inches.

What are the general measurements of the breech of the child when flexed? From trochanter to trochanter, from two and a half to three; from sacrum to anterior part of thigh when flexed forward, three inches.

What is the antero-posterior diameter of the pelvis alone? From one and a half to two inches.

What portion of the fetus is most important in an obstetric point of view? The head.

COMPOSITION OF THE CRANIUM.

How is the fetal cranium constituted? Of several different bones, so arranged as to present an ovoid figure.

How are the sutures constituted? They consist of membranous interspaces between the several moveable bones of the fetal head.

How is the cranium arranged as to its compressibility? Part of it is compressible, the bones being moveable upon, or capable of being slided over, each other,—and the other portion is incompressible, or not admitting of such alteration in the position of the bones.

Which of the cranial bones are compressible or

moveable? The occipital, and the two parietal, and the inferior maxillary,—the frontal bone is partially so.

Which may we consider as incompressible and immoveable? The temporal, sphenoid, ethmoid, malar, nasal, and superior maxillary bones.

What is to be understood by the term *vault* of the cranium? The vault of the cranium is composed of occipital, parietal, and frontal bones.

OVOID FORM—EXTREMITIES—SURFACES OF THE CRANIUM.

The head being of an ovoid form, what names are given to the two extremities of it? Posterior and anterior, or occipital and mental.

How many surfaces do we count upon the head of the fetus? A superior, an inferior, two lateral, a posterior and an anterior surface.

What is the boundary of the superior surface? A horizontal line, bounded by the upper part of the orbits.

What is the base of the head? All the immoveable part of it, viz.—the sphenoid in the centre, the temporal bones laterally, together with the bones of the face.

What part of the fetal head resembles a hemisphere? The posterior or occipital extremity.

What is the composition of the os frontis? Although it is divided nearly or entirely by a suture during early life, yet it is usually considered as one bone.

How in regard to the occipital bone? Originally it was in several separate pieces, but these so soon become fused together, that it is usual and proper to consider it as only one bone.

What position do the parietal bones occupy? The lateral positions of the head, above the temporal, and between the frontal and occipital bones.

INTEROSSEOUS SPACES OR SUTURES IN THE CRANIUM.

How many principal sutures are there, and what are they called? 1. The *Lambdoid Suture*, running from the bases of the occipital and parietal bones, between these bones, and along the entire lateral and upper portions of the occipital bone. 2. The *Saggital Suture*, extending forward from the upper point of the occipital bone, between the two parietal bones, to their anterior angles. 3. The *Coronal Suture*, extending along the anterior edges of the parietal bones, between them and the frontal bone, from their base. 4. The *Frontal Suture*, extending forward between the two upper edges of the frontal bone, continuous with the saggital suture to the root of the nose.

FONTANELLES.

What is found at the upper and anterior angles of the parietal bones, and at the upper and posterior angles of the frontal bone? A quadrangular or kite-shaped membranous space, called the anterior fontanelle, or the *bregma*.

What is found at the posterior extremity of the saggital suture? A triangular or cruciform membranous space, called the posterior or occipital fontanelle.

Is this posterior or occipital fontanelle always well marked on the fetal head? By no means—sometimes it is readily perceived, but more frequently it cannot be recognized as a triangular membranous space—it is therefore often merely linear.

Is a knowledge of these fontanelles of much importance in the practice of midwifery? They are of great value, as they are the chief means of diagnosticating the positions of the head during labor.

If no perceptible membranous space exists at the top of the occiput—how are we to recognize the presentation of the occipital extremity of the head? By

the angles at the upper and posterior ends of the parietal bones, and the rounded margin of the occiput.

What other fontanelles may be found on the fetal head? Two inferior ones at the posterior inferior edges of the parietal bones, and between them and the edge of the occipital bone.

What influence may these exert in diagnosis? Without care they may lead to error.

What are the boundaries of the posterior or occipital surface of the fetal cranium? From a point half way between the promontory of the occiput to the foramen magnum of that bone, round over the parietal protuberances, to a point near the anterior extremity of the saggital suture.

What is the situation of the posterior fontanelle in reference to the centre of this posterior surface? It is not usually in the centre, but mostly a little posterior to it.

VERTEX OF CRANIUM.

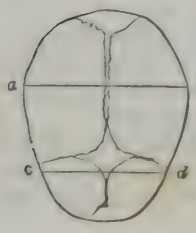
What is meant by the term *vertex* in obstetrics? It is applied to that part of the fetal head exactly in the centre of the posterior surface of the occipital extremity.

What figure does a plane of the occipital extremity present? Nearly that of a circle.

By what particular name is it known? Occipito-bregmatic circumference.

DIAMETERS OF THE CRANIUM.

Fig. 55.



What is the transverse diameter of this circumference called, and what does it measure? The bi-parietal diameter, and it measures from three, to three and a half inches, *a* to *b* fig. 55.

What is the perpendicular diameter called, and what does it measure? Occipito-bregmatic, and it measures from three, to three and a half inches, *g* to *i* fig. 56.

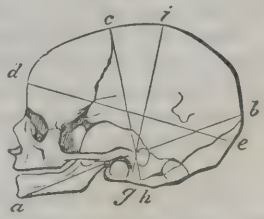
What is the horizontal circumference of the head? That which commences at the centre of the occipital protuberance, and passes round on each side of the parietal and frontal bones, till its ends meet in the root of the nose. It is shewn in outline fig. 55.

What is the long diameter of this circumference called, and what does it measure? Occipito-frontal, and measures four inches, *d* to *e* fig. 56.

What is the name of the transverse diameter, and what does it measure? Bi-parietal, and measures from three, to three and a half inches, *a* to *b* fig. 55.

What is the trachelo-bregmatic circumference? That which commences in front of the cervical vertebræ, and passes round over the temporal, and portions of the parietal bones, and terminates in the bregma or top of the head.

Fig. 56.



What are its diameters called, and what do they measure? 1. Trachelo-bregmatic, measuring three and a half inches, *h* to *c*, fig. 56. 2. Bi-temporal, measuring two and a half inches, *c* to *d*, fig. 55.

For all practical purposes, what should we consider the diameter of the base of the cranium? The same as those of the occipito-mental and the bi-parietal circumferences, of which the first diameter measures five inches, and the second, three and a half inches.

What diameters present within the circumference of a perpendicular longitudinal section of the cranium, and what do they measure? 1. The occipito-mental, five inches, *a* to *b* fig. 56. 2. The occipito-frontal, four inches, *d* to *e* fig. 56. 3. The occipito-bregmatic, three and a half inches, *e* to *h* fig. 56. 4. The trachelo-bregmatic, three and a half inches, *g* to *i* fig. 56.

What is the situation of the neck of the child, with regard to the cranium? It is situated a little posterior to a vertical line drawn through the middle of the long diameter.

Which represents the longer end of the lever, the mental or occipital extremity of which, the neck is a point or centre of motion? The occipital extremity.

What results from this when the body and head are equally compressed? A marked degree of flexion.

What is the relative size of the face with that of the head? Very small.

What is the facial circumference in obstetric language? From the top of the forehead to the end of the chin, over the lateral portions of the malar bones.

What are the two diameters of this facial circumference, and what do they measure? 1. The fronto-mental diameter, measuring three inches. 2. Bi-malar, two and a half inches.

Where is the centre of this circumference? In the root of the nose.

Although the diameters of the facial circumference are smaller than those of any other measurement, what diameters *really* are presented to the plane of the superior strait, in face presentation of the fetus? The trachelo-bregmatic, measuring three and a half, and the bi-parietal diameter, measuring three and a half inches.

What obstacle is added to the passage of the head in such cases? Part of the neck of the fetus, making the occipito-bregmatic diameter at least an inch longer.

When the forehead presents to the centre of the superior strait of the pelvis, what circumference presents to that of the pelvis? That which passes from the posterior fontanelle round upon the bi-parietal diameter to the chin.

What is the long diameter of this circumference? From chin to posterior fontanelle, measuring from four to four and a half or five or more inches.

When the occiput presents favorably to one of the pelvic planes, or which is the same thing, when the vertex presents to the centre of the pelvis, what circumference presents to that of the pelvis? The occipito-bregmatic circumference, which includes the occipito-bregmatic, and the bi-parietal diameters.

What relation does this circumference hold to the pelvis in every stage of its passage through the pelvis? Uniformly the same with the planes of the straits and cavity of the pelvis, especially when the occiput descends on either of the anterior inclined planes.

COMPRESSIBILITY OF THE CRANIUM.

To what shape is the compressible portion of the fetal cranium reducible? To that of a conoid.

To what length may the occipito-mental diameter be elongated? From five, to six or seven inches.

To what may the bi-parietal diameter be diminished by compression? From three and a half, to three inches.

When strong compression is effected upon the head in the pelvis, in what direction does it usually carry the bones? The os frontis and the parietal bones are carried backwards, and the occiput forwards.

DR. MEIGS' STATISTICS OF MENSURATION OF FETAL CRANIA.

To whom are we indebted for the results of the measurements of the greatest numbers of fetal heads ever yet reported in America? To Professor C. D. Meigs.

What does he say as to the result of his measurement? "I have carefully measured and recorded the size of three hundred crania of mature children that I received in the course of my obstetric practice. In a single series of one hundred and fifty heads I found the occipito-frontal diameter in fifty-two of them to exceed five inches. In 11, it was $5\frac{1}{2}$; in 8,

$5\frac{8}{12}$; in 3, it was $5\frac{3}{12}$; in 1, $5\frac{4}{12}$; in 1, $5\frac{6}{12}$; in 2, $5\frac{7}{12}$; and 1, $5\frac{9}{12}$. The sum of my occipito-frontal measurements was seven hundred and twenty-nine and seven twelfths of an inch for one hundred and fifty crania. The mean was four inches and ten twelfths. The sum of the bi-parietal diameters of the said one hundred and fifty crania, was five hundred and eighty-six inches and seven twelfths—the mean, three inches and eleven twelfths of an inch. The bi-parietal diameters exceeded four inches in sixty-eight of the children. In 19, it was 4.1; in 5, it was 4.2; in 6, 4.3; in 3, 4.4; in 1, 4.5; in only one case was it less than 3.6, the usual estimate, and in that case it fell to 3.4. I measured one hundred and twenty-six occipito-mental diameters of neonati at term, of which the sum was six hundred and ninety-nine inches and five tenths; so that the mean or average, of the one hundred and twenty-six diameters was five inches and a half. I know of no one who has measured so many, and I am sure that greater accuracy is not to be attained by any person. Upon these grounds, therefore, I am to inform the student that the occipito-mental diameter of the fetus, is five inches and a half; the occipito-frontal four inches and ten twelfths, and the bi-parietal three inches and eleven twelfths. The above statement ought to show that it is not a matter of small moment whether the head presents in labor by the vertex, the crown, or the forehead."

SIGNS OF PREGNANCY.

Into how many classes may the signs of pregnancy be divided? Two—rational or sympathetic, or physiological; and positive, physical (or mechanical) signs.

What is usually regarded as the first rational sign? Suppression of the menses.

Can this sign be relied upon? Not positively.

What other causes may suppress or suspend the menstrual function? Exposure to cold, uterine congestions, or structural diseases of the organ.

Are the menses always suppressed by pregnancy? Not always during the first months.

Are there any cases in which women menstruate only during pregnancy? Such cases are very rare, but have been mentioned by Dewees, Daventer, and Baudelocque.

When do the mammary glands become sympathetically affected? One or two months after conception, these glands enlarge, become the seat of slight pains or pricking sensations.

When do they begin to secrete milk? Usually toward the latter end of pregnancy.

Is milk never found in the mammæ, unless the female be pregnant or nursing? Milk is sometimes secreted by old women, and occasionally by very young girls.

Do the breasts never become tumid, or painful, except during, or as a consequence of, pregnancy? They are liable to become tumid and painful from other causes—as cold, uterine irritation, &c.

What changes do the nipples or papillæ undergo, during pregnancy? They become enlarged, developed, more tumid, darker colored.

Do any changes occur in the areola? It becomes larger and darker colored—in brunettes it becomes almost black. The mucous follicles, about the nipples, become more prominent, and the veins more blue.

May not these changes occur from other causes than pregnancy? They may arise from mechanical irritation, as frequent handling, &c.—also, from sympathetic irritation in the uterus, &c.

What changes take place in the uterus during the early weeks or months of pregnancy? It enlarges, becomes developed, at first in all directions.

DEVELOPMENT OF THE UTERUS CAUSED BY PREGNANCY.

At what time does the development of the uterus begin to form a tumor in the abdomen? In the third and fourth months.

Do young married females mostly become considerably developed about the pelvic region, before they are impregnated? Yes, not only their hips, but their breasts also, are apt to become enlarged.

Is there any difference in the direction of the abdominal tumor in different women, or in the same woman at different pregnancies? Yes—in women whose abdominal muscles are relaxed, the uterine tumor is more prominent.

Is the tumor of which we have been speaking, a positive evidence of pregnancy? It is not a positive evidence, because some women become very fat, internally, after marriage.

Have women any power to conceal the abdominal development, when they wish to appear not pregnant? They can frequently succeed in doing so, by their manner of carriage and dress.

What is the order of development of the abdominal tumor, in cases of pregnancy? There is no great enlargement till the third month; at this time there is a fulness in the hypogastrium—at four months the tumor is larger—at five months the uterus is above the pubes, &c.

Is there any alteration in the size of the abdomen during the first two months? No—there should be no distinct tumor found in the abdomen during the first and second months.

Is there any tumefaction in the hypogastric region, during the third month? Yes—there is usually.

Upon what does it depend? Partly upon the development of the abdominal parieties, and partly upon the circumstance, that the intestines are carried up by the fundus of the uterus.

What is the general condition of the upper and lateral portions of the abdomen, at the third month? It is flat above, and rather puffy in the iliac fossæ.

Has this usually been regarded as a valuable diagnostic sign of pregnancy? By many, it has been so

considered. The French have the adage—"En ventre plat, enfant il y a."

Where is the top of the uterus situated, in the fourth month? It is immediately above the superior strait, and the tumor can then be just felt.

Does the woman usually experience a fluctuation or fluttering about the end of the fourth month? She does.

QUICKENING.

What is this sensation called? Quickening.

Is it proper to regard this as the period at which the child becomes quickened into life? The child is endowed with life at all its stages of uterine existence.

Should it not be viewed as an evidence that the degree of the development of the fetus is such, that it can exert muscular movement at this time? This would be the proper view to take of it; though some have thought that it arose from the fact that the fetus, capable of motion at much earlier periods, now made its impression upon the sensation of the mother in consequence of the womb being, at this stage of its development, in more intimate contact with the abdominal nerves.

Is this period of quickening always fixed at four or four and a half months? No; some women feel the fetus earlier, and some later than this.

Upon what does this difference of time probably depend? Either upon difference in degrees of development, or upon the different degrees of sensibility in mothers.

When does quickening *really* take place? At the time of conception.

What other movements take place during pregnancy which is apt to excite the attention of the woman? The slipping up of the uterus out of the pelvis.

When does this happen? Almost invariably between the fourth and fifth month.

Does the occurrence of this sensation of "quickening," with the other signs enumerated, remove all doubts

as to the existence of pregnancy? No—some women have all these signs, and are not pregnant; even some who think they not only feel, but see the movements of the child through the abdominal parieties.

May a woman be pregnant, when none of these symptoms occur? Yes—when if they have occurred at all, they have been very slight, and no motion whatever has been noticed.

Where is the top of the tumor in the fifth month? Half way up to the umbilicus.

Where at the sixth month? At the umbilicus.

Where at the seventh month? Three fingers' breadth above the umbilicus.

Where at the eighth month? At the epigastric region.

Where at the ninth month? It does not rise higher during this month, but usually expands more into the lateral portions of the abdomen and pelvis. Towards the end of the gestation, it seems even to descend a little.

Is the protrusion of the navel always a diagnostic sign of pregnancy? No—though usually perhaps always present at certain stages of true pregnancy, yet it may occur from other causes than pregnancy; as the existence of large tumors, &c.

May enlargements of the abdomen from obesity cause an equal degree of protrusion? We believe that in fat women, who are not pregnant, the umbilicus is always sunken.

Is the gait of a female altered by pregnancy? It is more vacillating; the feet are placed further apart.

PHYSICAL EXPLORATION.

How is the existence of pregnancy to be verified, admitting all the sympathetic signs to be fallacious? By physical examination.

In what does this examination consist? In examination by the hand of the external surface of the abdomen, &c.

What is to be gained by this? A knowledge of the size and kind of tumor which occupies the cavity, and sometimes also of its contents.

How can you appreciate the existence of any thing within the cavity of the tumor, by such an external examination? By applying the bare cold hand upon the surface of the abdomen, a shock is transmitted to the contents of the uterus, which if endowed with vitality will sometimes move with a force which can be felt.

What position is most suitable for this purpose? The patient should be on her back; have her shoulders raised, her limbs and abdomen flexed.

May she contract the abdominal muscles? No; she should keep every thing as flaccid as possible, she should breathe easy, and make no straining effort.

Should the hand of the examiner be removed immediately after it has been applied to the abdomen? No; it should be kept some moments in contact with the surface, that it may appreciate any movements which may take place.

Is this external examination sufficient to enable the accoucheur always to diagnosticate pregnancy? No; it is liable to fail, from a variety of circumstances.

What other resource is there? Examination per vaginam.

What is this process called in professional language? The touch.

TOUCH.

What is the relative importance of this operation to the accoucheur in pregnancy and diseases of the uterus? By some high authority it is regarded as important to the accoucheur as the lever to the mechanic, and the compass to the mariner.

What conduct should the accoucheur observe when about to make this kind of examination? That which has regard to the sense of delicacy on the part of the female.

To whom should he make the proposition for an examination? To a third person, as a nurse, the husband, or to some matronly female.

How should he dispose of himself, while such a proposition is communicated to the patient? He should retire into another room until the decision is made, unless his proposition is promptly acceded to.

ARRANGEMENTS FOR PHYSICAL EXAMINATION.

What arrangements should be made in order to conduct the examination most satisfactorily? The room should be darkened, and the patient dressed lightly, and placed in the suitable position.

Should the physician insist upon having a third person present? He should always do so if it be at all practicable.

How should the patient be placed? The horizontal position will sometimes answer, though many advantages are gained by the erect position.

If she be placed in the horizontal position, upon what part of her body should she recline? When the simple touch to determine the condition of the neck and mouth of the uterus, is to be resorted to only, she may recline upon her left side:—but if both external and internal examination is to be made, she should be placed upon her back, with her hips to the edge of the bed, and her lower extremities flexed, head and shoulders considerably raised.

What accommodations should the nurse furnish for the physician? Several napkins, some unctuous matter, a chair by the bed, a basin of warm water, soap, &c.

How should the accoucheur sit? At the side of the bed, with his right hand towards the hips of the patient, if she be on her left side; but if on her back, he should sit with his face towards her, that he may reach his left hand to her abdomen.

What is the rule for carrying the hand under the coverings? The clothes should be properly raised at their lower edges, by the left hand, then the right

nand, with the index finger lubricated, somewhat flexed, and the thumb erect and abducted is next passed cautiously up under the clothes without uncovering the patient.

Supposing your patient to be standing, how should she be arranged? She should be allowed to rest her hips against something firm, and then recline forward as if to lean upon the examiner.

How should the examiner be situated? Either upon a low seat, or resting upon one knee, in front of the patient.

To what portion of the genital fissure should the finger be carried? Always to the posterior commissure, avoiding contact with the mons veneris if possible. When the finger has thus gained access to the vagina, it should be turned to present its radial edge to the arch of the pubes.

Can the touch afford us any good idea of early pregnancy? Yes; it may even then appreciate the changes which have occurred in the uterus.

What is the earliest period however at which any *positive* information can be acquired? After the fourth month.

What can be recognized in the uterus after this? The existence of a body suspended in a fluid.

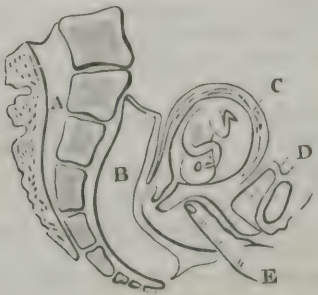
BALLOTTEMENT—HOW PERFORMED.

What name has been given to the process by which this knowledge is obtained? Ballottement, or uterine palpation, or percussion.

How is this performed? By the application of the index of one hand to the mouth or neck of the uterus, while the other hand is applied upon the abdomen over the fundus of the uterus. The finger in the vagina, is then suddenly to push up the part of the uterus with which it is in contact; while the palm of the other hand is prepared to receive any impression which such a shock may make; the percussing finger is to be kept applied to the os or cervix uteri, that it

may determine whether any body floating within the cavity, descends upon it. In this way very frequently it is possible to determine the existence of a body within the uterus and even to a certain extent the degree of its development.

Fig. 57.



AUSCULTATION.

What other means of diagnosis has the obstetrician, besides that of the external and internal touch? Auscultation.

What are we to appreciate by auscultation? The existence or non-existence of the vital actions of the fetus.

How many modes are there of performing it? Mediately through the stethoscope, or immediately by the application of the ear to the surface of the abdomen.

Does delicacy require that mediate auscultation be used in cases of supposed pregnancy? It is certainly most proper when it will answer. If immediate auscultation is resorted to, the under dress of the patient should be allowed to cover her person.

What does auscultation afford, which ballottement does not? Ballottement determines the existence or non-existence of a body within the uterus, but does not indicate its vitality—auscultation contributes much to determine the latter, by mostly recognizing

the sounds peculiar to the fetus, &c., when it is alive in utero.

Is it an important improvement in the means of obstetric diagnosis? It should be considered as a very important improvement in obstetric diagnosis.

How many sounds are to be discriminated by this auscultation? Two—one depending upon the motions of the fetal heart, and the other said to depend upon the circulation of blood in the placenta.

What is the difference in these sounds? The first has a quick double beat or sound, amounting to from one hundred and forty to one hundred and fifty in the minute; the other is synchronous with the actions of the maternal heart.

What is the character of the first kind of sound? It has been aptly compared to the ticking of a watch under a pillow.

What is the character of the other sound that is heard? It is like the cooing of a dove, or like the passage of a fluid through a great many cells.

What is it called? Placental soufflet, or placental sound.

Is it proper to rely upon the absence of the sounds, as an evidence of death of the fetus? Not if other symptoms of its vitality present strongly.

Upon what does the cooing sound probably depend? Not upon the circulation of blood in the placenta, but upon the circulation of blood through the uterine vessels, about, or over that part at which the placenta is seated.

May this sound be confounded with any other? Yes, with the pulsations in the iliac arteries, &c.

Is any caution to be used, that the patient's clothing may not confuse the sound? The friction of the patient's dress may confuse it, unless care is taken to keep it smooth upon the abdomen.

What may obscure this sound while the child is actually alive? The existence of the placenta at the posterior part of the uterus; or there may be a very fat omentum interposed.

Is it proper to decide that pregnancy does not exist, if this soufflet cannot be heard? No—the situation of the placenta may be such, that although its circulation may be active, it cannot be heard.

What is the earliest period of pregnancy at which auscultation becomes of any value? Kennedy is reported to have heard it at the twelfth week, but it is scarcely to be relied upon, until at the end of the fourth, or during the fifth month.

What is the condition of the mother most favorable for auscultation, as regards corpulency? The thinner she is, the more readily can the sounds be heard, if the position of the child is favorable.

What situation of the fetus is most favorable for emitting the sounds of its heart? That in which its back is applied to the anterior parieties of the uterus.

At what part of the uterine tumor is the fetal sound most frequently heard? Generally at the lower and lateral portion of the uterus.

What would modify the position at which these sounds are most distinctly heard? A change in the position of the child.

Suppose the breech presented to the os uteri, where should the fetal sound be most readily heard? Higher up toward the fundus of the uterus.

Is auscultation of any value in the diagnosis of compound pregnancies? In twin pregnancies, there would be two points whence the sound should emanate, one above and another below, or one on each side.

Would the placental soufflet, as it is called, be much altered by a twin pregnancy? Not necessarily, especially, if the placentæ were attached to each other, or the fetuses had one common placenta.

CONDITION OF VAGINA, URINE, ETC.

What other signs have recently been spoken of as evidences of pregnancy? A blue appearance of the lining membrane of the vagina, dependant probably merely upon venous congestion of the part.

Is this to be regarded as a certain sign? Its evidence should be received with great caution.

How should we regard the report of the chemical changes of the urine, resulting in the formation of a gelatinous albumen or a substance called Kiestine, as an evidence of pregnancy? By no means as positive, inasmuch as there is yet much conflicting testimony on this subject.

DURATION OF PREGNANCY.

What is the usual duration of pregnancy, utero-gestation or gravidity? Nine calendar months and ten days, ten lunar months or two hundred and eighty days, from the last appearance of the catamenial discharge.

May not healthy well developed children be born in a shorter time than that? There is strong reason to believe that some fetuses are well grown and fully mature for extra-uterine existence in less than two hundred and eighty days after conception.

Are there not numerous instances on record, sufficiently well authenticated to induce the belief that the fetus is either longer than ten lunar months in being sufficiently developed, or that it may be retained in a viable condition, in the uterus greatly beyond that time? The cases quoted by English, Italian, and American authorities would seem to prove that healthy children may be born between the two hundred and fifty-ninth, and the four hundred and twentieth days—from the time of conception.

PRECURSORY SIGNS OF LABOR.

What are some of the precursory signs that the woman has nearly or quite completed the term of utero-gestation? A subsidence of the abdominal tumor, so that pressure is taken off from the epigastrium, and the woman feels more buoyant, free, and comfortable: the brain, heart, lungs, and all the superior viscera performing their functions more readily.

What sensation is then usually experienced about

the pelvis? One of pressure, uneasiness, constant desire to urinate, or defecate every ten or fifteen minutes.

LABOR.

What is meant by the term *labor* in obstetric language? It signifies an effort on the part of the uterus and the mother to expel its contents.

Is it to be regarded as a mere mechanical action, or a vital function? It is a function, partly dependant upon mechanical, though principally on vital action.

How many kinds of cause of labor are there? Two—natural, (or spontaneous,) and accidental.

What is the actual cause of labor? At present it is unknown to physiologists.

What are accidental causes? All such as indirectly excite the uterine fibres to contraction, whether at full time or prematurely.

What influence may excitement or injury of any of the viscera have upon the production of labor? It is mostly liable to excite the contractions of the uterus, and thus bring on labor.

What effect are violent inflammations of any of the viscera, or any febrile condition of the general system, liable to have upon labor? They always increase the liability to uterine contraction.

Does the fetus perform any active part during labor; that is, does it contribute in any way by its own efforts to effect its delivery? None whatever, unless in some cases strong motions may excite the contractions of the uterus; otherwise it is in this respect entirely passive.

What is the main agent in the process of labor? The uterus.

What may be regarded as important accessory aids? The abdominal muscles, the diaphragm, and indeed all the voluntary powers of the mother.

ACTION OF THE UTERUS.

What evidences have we that the uterus is the prin-

cipal, and may be the sole agent in the expulsion of the ovum? Labor has sometimes taken place during sleep, and the ovum has been expelled immediately after the apparent death of the patient; it also has happened while she was comatose and could use no effort.

What evidences are offered to the sense of touch, that the uterus contracts? If you place the hand on the abdomen when the woman complains of pain, you can feel the uterus grow hard and firm. If you apply the finger to the uterus per vaginam, you will feel it tightening itself up when the patient complains of pain.

Does the state of the mind exert any influence upon the contractions of the uterus in labor? Although uterine contraction is not subject to the volition of the patient, yet moral causes may exert great influence over it, sometimes increasing the violence of the contractions, but more frequently suspending them, or rendering them much more feeble.

What effect has great anxiety upon labor? It almost always retards it, while on the other hand, confidence and hope increase and facilitate it.

To what part of the system may the excitement of the uterine system be translated? To the brain and spinal marrow.

What are the usual consequences of such a transla tion? Puerperal convulsions.

To how many kinds of contraction is the uterus subject? Two: tonic, and alternate or spasmodic.

What is to be understood by the term tonic contraction? A regular and permanent contraction of all the muscular fibres of the uterus.

What synonyme has tonic contraction? Tonic rigidity.

What is meant by spasmodic contractions of the uterus? Those contractions which take place suddenly, continue a few minutes and then subside.

What terms are synonymous in reference to the ac·

tion of the womb in labor? Alternate contractions, painful contractions, labor pains, &c. Pains are not however, always proportioned to the degree of the contractions in such cases.

Is not tonic contraction of the uterus painful? Not usually.

What are its effects? It squeezes the blood from the vessels, and regularly diminishes the size of the uterine tumor.

Where is probably the seat of the pain during the spasmodic contraction? About the neck of the uterus.

What is the usual order of frequency of the spasmodic or alternate contractions of the uterus in labor? At first, about once in half an hour, then gradually more frequently.

What is the effect of these alternate contractions upon the uterus? They possibly assist to dilate the orifice, and do gradually force out some portion of the ovum.

What effect has the dilatation of the os uteri upon the long diameter of the uterus? It allows its long diameter to become shorter.

What effect has the dilatation of the os uteri upon the membranes which were situated over the cervix and os uteri? They necessarily become separated from their connexion with that part.

BAG OF WATERS.

What happens to the membranes, as the os uteri becomes considerably expanded? They mostly pass out into the vagina, and present what is usually called, the "Bag of Waters."

What influence does the presence of this bag of waters usually exert upon the vagina? It distends it, and often excites a copious secretion of mucus.

What becomes of this bag of waters under the continued and repeated contractions of the uterus? It ruptures or bursts, and suddenly discharges its con-

tents, or in some cases remaining entire, it is protracted beyond the vulva, till the entire ovum is expelled.

Are you to expect always to find a "bag of waters" in the vagina after the woman has been in labor some time? Not always; for it sometimes happens that the membranes rupture before the os uteri is dilated to any extent, but even when this does not happen, the presenting part of the fetus may be applied so closely to the membranes at the os uteri, that there is little or no fluid interposed:—again, the size of the ovum may be so great, or the membranes so full, that it is impossible for a segment of the contents of the uterus to pass beyond the level of its orifice until rupture takes place.

What does the uterus embrace, and act more directly upon, as soon as the waters are forced off? The fetus.

ACTION OF THE ACCESSORY POWERS.

When are the accessory powers of the mother brought to bear upon the fetus? Mostly, soon after the expulsion of the waters.

In what way do these act? First, the woman fixes the diaphragm by a deep inspiration, and then suspending the respiratory effort, she contracts the abdominal muscles so as to bear downward; then she fixes her lower extremities, which are generally flexed, by putting her feet against some solid body; afterwards she seizes hold of some immoveable body, if she can reach it, and thus brings into action all her voluntary powers, for forcible and even violently expulsive effort.

Are these accessory powers very important in some cases of labor? Although some women are delivered by the contractions of the uterus solely, yet in the greatest number of cases, these accessory powers become indispensable for the completion of parturition.

How is the uterus sustained in situ during the powerful effort of the accessory powers? The lower part

of it is fixed in and rests upon the margin of the pelvis.

Can a woman excite the tonic, or bring on the spasmodic contractions of her uterus, by the voluntary exertion of the accessory powers? By the effort of the abdominal muscles she can frequently stimulate the uterus into action.

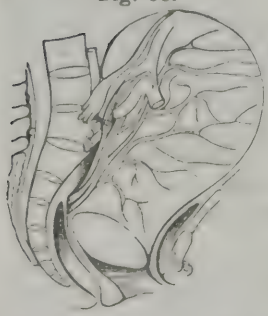
Are the accessory powers ever necessary to aid in the dilatation of the os uteri? No: on the contrary, the patient should be prohibited from using them by bearing down during the dilating process.

What observation would go to give an idea that the accessory powers were not always completely under the influence of the will of the patient? That of the fact, that when the child is pressing against the os uteri, or some of the soft parts of the vagina, it seems to be impossible for the mother to avoid bearing down.

DIFFERENT STAGES OF LABOR.

Into how many stages is labor usually divided? Three.

Fig. 58.



What is the first stage? That in which the os uteri is undergoing the process of dilatation sufficiently to permit the child to escape through it. Fig. 58.

What constitutes the second stage? The expulsion of the child from the uterus through the pelvis and soft parts of the mother.

What does the third stage include? The complete expulsion of the appendages of the fetus, viz.: the placenta and membranes.

What is the usual situation of the fetus in utero, at the commencement of labor, or the full period of gestation? It is flexed upon itself; its back being usually applied to the anterior portion of the uterus, its

occiput towards the anterior half of the maternal pelvis, and the vertex applied to the orifice of the uterus.

Where are the first pains of labor usually felt? In the back, or hypogastric region.

Are they uniform in this respect in the same women at different times? No: sometimes they begin in the back, and sometimes in the lower part of the abdomen.

When may they be considered as most regular? When they are felt first in the back, and extend round to the pubic region.

What inconvenience does the woman usually experience beside the pain in the early stage of labor? A sense of weight and of constant inclination to evacuate the bladder and bowels.

When does the woman begin to express her desire to seize hold of some support, that she may exercise her accessory powers? Usually at the end of the first stage of labor.

What is the usual state of the mind during the first stage of labor? Irritable, petulant, desponding.

What is her physical condition? She is often chilly, flatulent, sick at stomach, sometimes vomiting small quantities of food recently taken, but mostly little else than air.

What is the popular opinion respecting the prognosis afforded by sick stomach? That sick labors are easy labors, and this idea is usually correct, for nausea relieves rigidity.

What is the condition of the pulse in the first stage? It is usually small and feeble in the first stage.

What may be inferred from the fact that there is a secretion of mucus tinged with blood from the vagina? That the woman is actually in labor.

What is this secretion called by nurses and other women? A *show*.

Whence does it arise? Probably from the vessels which are ruptured by the separation of the membranes from the mouth and neck of the uterus.

May a woman have a great deal of pain about the back and abdomen, and yet not be in labor? She may have spurious, inefficient, though sometimes very severe pain.

How are these to be distinguished? By the touch.

What sensation do they communicate to the finger of the accoucheur, when introduced against the os uteri? It is found that the uterus does not contract at all, or if at all, the contractions are not accompanied by dilatation of the os uteri.

Is the dilatation of the os uteri regular and uniform, or does it progress more rapidly at one time than another? It usually dilates very slowly at first, but afterwards more rapidly.

What is the usual shape of the os uteri during labor? At first it is round, but as it dilates, it assumes the shape of the part of the fetus which is about to engage in it.

PROGNOSIS BY TOUCH.

What prognosis can be founded upon the condition presented by the os uteri to the touch? It is very uncertain; as a general rule, when the os uteri is soft and fleshy, though somewhat thick, the dilatation will proceed rapidly.

What may be expected, when you find the os uteri firm and thin? Generally, that the labor will be slow in its first stage.

Can these conditions be relied on with any confidence? No: practitioners of long experience are often disappointed in them.

What is the best mode of testing the degree of dilation at each pain? The application of the finger in contact with the os uteri during several successive contractions.

AVERAGE DURATION OF LABOR.

What is the average duration of labor? From computations made by Dr. Meigs, who has superintended

very many cases, the average duration of labor is four hours, the number of labor pains is about fifty, they last each about half a minute; so that the parturient woman really suffers from the uterine contractions about twenty-five minutes, and these twenty-five minutes are distributed through the four hours of a labor of mean duration.

RELATIVE DURATION OF THE DIFFERENT STAGES.

What portion of the whole duration of labor, is usually occupied by the first stage? About ten-twelfths.

What for the second or expulsive stage? About one-ninth.

What for the third stage, or complete expulsion of the placenta, &c.? One twenty-fourth.

CONDITION INCIDENT TO THE DIFFERENT STAGES OF LABOR.

Does the first stage involve mother or child in danger? Not necessarily, unless the membranes rupture prematurely; then the child may sometimes suffer from the severity and frequent repetition of the contractions.

May either mother or child, incur any risk during the second stage? The mother rarely incurs any hazard, unless there be great physical obstacles to the success of the effort, or some disturbance occur in her nervous or vascular system, but the child may be said to be in imminent danger, in many cases.

What accident may happen to it? It may become apoplectic from the forcible pressure of the uterus upon it, while its head is retained in the pelvis, or if expelled too rapidly, it may be in a state of asphyxia.

Is the mother subjected to any danger, during the third stage? Her danger at this time is often imminent; hemorrhage, inversion of the uterus, &c., are liable to occur.

What sort of pains usually characterize the first, or

dilating stage of labor? They are usually described, as *cutting*, *grinding*, or *tearing* pains.

In what respect do those of the second stage differ? They are *forcing*, *bearing down*, *expulsive*.

What position does the woman usually assume during the first stage, if unrestrained by the presence of those around her? She will sit, stand, or walk about; sitting or kneeling down only when she has a pain.

What attitude does she usually assume, when in the second stage? She mostly prefers to lie down, flex her body and lower extremities, but extend her arms to embrace something, with which to support the bearing down effort she is about to make.

What is her physical condition during the second stage? Her pulse becomes excited both by the effort, and the occasional suspension of respiration. She is mostly bedewed with perspiration, and when a pain comes on, her face becomes florid, sometimes almost livid.

Is the increase of the pulse necessarily owing to febrile excitement? No; it is the result of exercise, and should be distinguished from the pulse of inflammation.

What are some of the consequences of this effort? Mostly an increased secretion of serum from the skin, and mucus from the cavities; occasionally, also, ecchymosis of the conjunctiva, epistaxis, and even apoplexy, or cerebral congestion.

What consequences often result if the secretions do not increase under this effort? The patient is almost sure to become febrile.

What is the condition of the mind, during the second stage? It is more calm and confident, the patient now often solicits the return of pains, and she rarely now imagines that she will die before labor is accomplished.

What disturbance is she liable to experience in her lower extremities, in this stage? Severe cramps and pains.

Why do these take place? In consequence of the pressure exerted by the child's head upon the sacral nerves.

What condition of the brain may supervene in this stage of labor? Delirium or mania may ensue.

What urgent sensation takes place when the presenting part of the child is brought in contact with the perinæum? An impulse to evacuate the bowels.

Should the patient be allowed to rise to comply with such a desire? It would be unsafe, as well as unavailing for her to rise for that purpose at this stage of the labor.

To what extent does the perinæum usually stretch over the presenting part of the child? Generally sufficient to cover the part presenting.

What takes place in reference to both the moral and physical condition of the patient, immediately after the extrusion of the child? The uterine pains now usually at once subside; the woman, in an ecstacy of gratitude expresses herself relieved; her moral sensibilities are sometimes wrought up to their highest degree.

What usually occurs soon after this? The uterus again contracts for the purpose of expelling the placenta.

How many steps or stages are there for the expulsion of the appendages of the fetus? Usually three; one in which the separation of the placenta is effected, and the other in which is thrown into the vagina, and the third, in which it with the membranes is expelled from the vagina.

By what power is the placenta usually expelled from the vagina? By the voluntary powers of the mother alone, unless aided by the hand of an assistant.

What amount of hemorrhage usually attends the expulsion of the placenta, under most favorable circumstances? Perhaps half a pint, rather more or less.

Suppose hemorrhage should become profuse, in what length of time might it destroy the life of the mother? It is asserted by very respectable authority, that it would require only five or six minutes.

Whence does this blood escape? From the patulous orifice of the large veins, opposite to the point at which the placenta was situated.

What are the sources of danger, during the third stage of labor? Simple exhaustion from the severe efforts made during the second stage, but particularly from hemorrhage.

What would you call a tedious labor? One which occupies twenty-four or more hours.

What are some of the causes of tedious labor? Rigidity of the soft parts, small size of the pelvis, or deviations of the presenting part of the child; want also of regular action of the uterus.

What is the usual and proper direction of the uterine forces? Such as to propel the contents downward and a little backward, in the direction of the axis of the superior strait of the pelvis.

How is the direction of the uterus modified by the effort of contraction? It is carried more and more into a line with the axis of the superior strait.

What is to be understood by the term floor, or bottom of the pelvis? The lower end of the sacrum, the whole of the coccyx, and the perinæum.

When the presenting part of the child is carried down to this part, what direction has it next to take? It must be propelled forwards along the curvature of the coccyx and perinæum.

GENERAL CLASSIFICATION OF LABOR.

How are labors usually classified? Into rapid, slow, easy, difficult or laborious, assisted or unassisted, manual and instrumental, simple and complex, natural or unnatural, eutocia and dystocia.

What conditions are necessary for the performance of natural labor? The uterus should contract regu-

larly, the child present favorably, and that the pelvis be sufficiently large, and the soft parts of the mother be sufficiently relaxed.

PRESENTATION AND POSITION.

What do obstetricians mean by the word *presentation?* That some portion of the contents of the ovum becomes situated at the orifice of the uterus, at or near the centre of the pelvis.

What is meant by the phrase *position of the fetus* in midwifery? That some part of the presentation is directed towards some particular, or specified part of the maternal pelvis.

CLASSIFICATION OF PRESENTATIONS.

How are natural labors classified as to presentation? First, into those in which the cephalic extremity of the fetal ellipse presents favorably; and secondly, into those in which the pelvic extremity presents to the pelvis of the mother.

Why does the cephalic extremity present most frequently? Probably, 1. Because the head is heavier than any other equal bulk of the body, and therefore descends in the liquor amnii. 2. Because in the formation of the peculiar figure of an ellipse the cephalic extremity is better adapted to the small extremity of the ovoid cavity of the uterus.

GRAND VARIETIES OF OCCIPITAL POSITION.

How many grand varieties of occipital positions are there? Two. First, in which the occiput presents to some part of the anterior half of the circle of the superior strait. Second, in which the occiput presents to some part of the posterior half of the superior strait.

Why is it preferable that the occiput present to the anterior semicircle of the pelvis, in case of cephalic presentations? Because the head can then most readily descend along the planes of the pelvis, and by

easy movements upon the neck, pass out under the arch of the pubes.

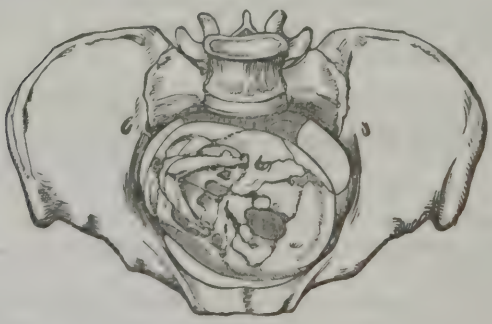
PARTICULAR POSITIONS OF CEPHALIC EXTREMITY.

How many positions of the head are generally recognized? Six—of which three are anterior, and three are posterior.

What is the first position of the occiput? That in which the occiput present to that portion of the linea-ilio-pectinea, which is within the left acetabulum, and at the same time the sinciput or bregma presents to the right sacro-iliac symphysis.

What diameter of the child's head corresponds to the different parts of the pelvis, in the first position? The occipito-bregmatic diameter of the head, corresponds to that oblique diameter of the pelvis, which extends from the left acetabulum to the right sacro-iliac symphysis—the bi-parietal diameter of the head corresponds to the other oblique diameter of the pelvis. The occipito-mental diameter of the head, corresponds to the axis of the superior strait, and upper part of the cavity of the pelvis, (see fig. 59.)

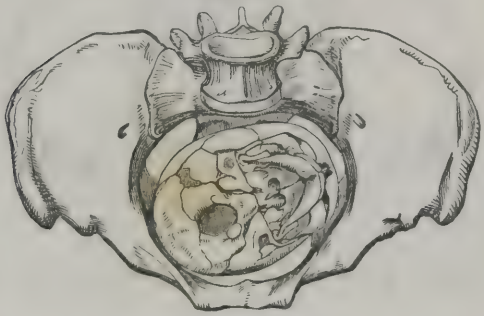
Fig. 59.



What is the second position? The occiput is towards the right acetabulum; the sinciput toward the

left sacro-iliac symphysis; the occipito-bregmatic diameter, therefore, corresponds to this oblique diameter of the pelvis, while the bi-parietal, also, corresponds to the other oblique diameter. The occipito-mental diameter corresponds to the axis of the pelvis. (Fig. 60.)

Fig. 60.



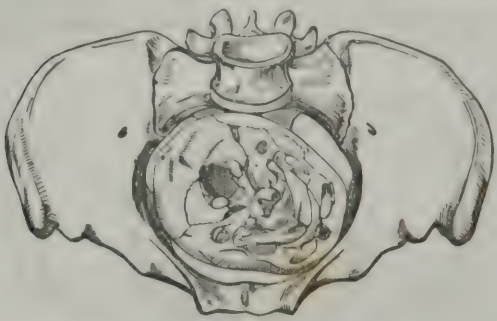
What is the third? The occiput is directed to the symphysis pubes, and the sinciput to the sacrum. The occipito-bregmatic diameter of the head, therefore, corresponds to the antero-posterior or sacro-pubal diameter of the pelvis; the bi-parietal diameter of the head to the transverse diameter of the superior strait of the pelvis; the occipito-mental diameter corresponds to the axis of the pelvis.

What is the fourth? The occiput is directed to the right sacro-iliac junction; the sinciput or the bregmatic, to the left acetabulum. Hence the occipito-bregmatic diameter corresponds to this diameter, and the bi-parietal diameter of the head to the other oblique diameter of the pelvis. The occipito-mental diameter corresponds nearly or quite to the axis of the pelvis. (Fig. 61.)

What is the fifth? The occiput is directed to the left sacro-iliac symphysis; the sinciput or bregma to the right acetabulum. Hence the occipito-bregmatic diameter corresponds to this oblique diameter of the

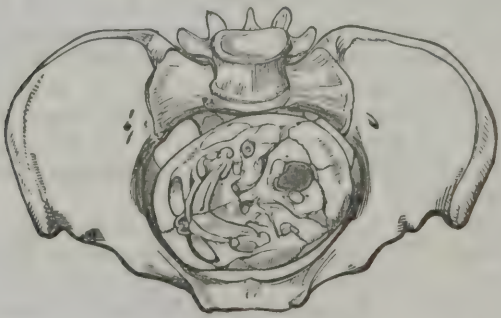
pelvis, while the bi-parietal does to the other oblique diameter. The occipito-mental diameter of the head

Fig. 61.



corresponds to the axis of the superior strait. (Fig. 62.)

Fig. 62.



What is the sixth? The occiput is directed to the sacrum, and the sinciput or bregma to the symphysis pubes. The occipito-bregmatic diameter corresponds to the sacro-pubal or antero-posterior diameter of the superior strait of the pelvis; the bi-parietal diameter corresponds to the transverse diameter of the pelvis, and the occipito-mental diameter corresponds nearly or entirely with the axis of the superior strait.

FLEXION.

What technical term is used to describe that movement executed upon the child by the contractions of the uterus, by which the thorax and chin are brought into contact, and the occipito-mental diameter of the head, is made part of the long diameter of the fetal ovoid or ellipse? Flexion.

ROTATION.

What influence do the inclined planes, the sacrum, coccyx, and perinæum exert upon the head of the child under the continued contractions of the uterus? In the first position, the occiput is compelled to respond to the inclination or spirality of the left anterior plane till it appears under the arch of the pubis.

Fig. 63.



(Fig. 63.) In the second position, it is obliged to pass on the right anterior plane till it reaches the same

point. In the fourth position, the occiput is passed on the right posterior plane to the middle line of the sacrum, while in the fifth position, it passes on the left posterior plane to the same point.

What is the movement just described called? Rotation.

Does rotation take place in the third and sixth positions? No; in these positions the occiput passes so nearly down upon the anterior or posterior median line of the pelvis, that no rotation is perceptible.

EXTENSION.

What happens to the head when it has reached the floor of the pelvis, during process of parturition? In the occipito anterior position, as soon as the sinciput has been impinged upon the sacrum, it is driven forward along the arc of the sacrum, coccyx and perinæum, and the occiput pressed against the legs, and sometimes the crown of the arch of the pubes. It thus undergoes the movement of *extension*, as shewn in fig. 64.

Fig. 64.



In occipito-posterior positions, when the occiput comes to the floor of the pelvis, it is propelled along the same parts of the sacrum, coccyx, and perinæum, and the sinciput, forehead, and face are forced against

the anterior part of the pelvis, and thus the head has to be subjected to *increased flexion*. See fig. 65.

Fig. 65.



How does the child's head pass through the inferior strait? The occipito-mental diameter corresponds to the axis of the inferior strait; the occipito-bregmatic to the antero-posterior, or coccy-pubal diameter; the transverse diameter of the head to the transverse or bis-ischiatic diameter of the mother.

When does expansion of the perinæum begin to take place? As soon as the head fairly engages in the inferior strait.

What is this expansion called? The perinæal tumor.

To what degree does the perinæum become expanded? Sometimes till it is large enough to cover the whole cranium.

When may extension of the child's head be considered as perfect? Just as the face or occiput is clearing the perinæum.

When does the perinæum offer the greatest resistance to the escape of the child? At the time in which the parietal protuberances are about to escape.

RESTITUTION.

What takes place in regard to the position of the

head, after it clears the perinæum? *Restitution*, in which the head of the child takes the oblique position at right angles with the direction of the shoulders.

ROTATION OF THE SHOULDER.

What change of positions do the shoulders undergo? They rotate on the inclined planes. One shoulder to get in front of the sacrum, and the other behind the symphysis pubes.

What direction does the head assume as the shoulders become engaged under the symphysis, and in front of the sacrum? The occiput presents to the left tuberosity of the ischium, and the chin towards the right, in the first and fifth positions, and the occiput towards the tuber of the right ischium, and the chin towards the left, in the second and fourth positions.

Do the shoulders engage in the same inclined planes in which the occiput did? No; always in the opposite ones.

What change takes place in the axis of the body of the child as the shoulders escape? The body curves upon its axis laterally to accommodate itself to the curvature of the axis of the pelvis.

What part of the child offers the greatest resistance to the delivery in cephalic presentations? The head.

What other portion offers the next degree of difficulty? The shoulders.

Which shoulder is delivered first? In cases of easy labor the pubal shoulder first, but in cases of great rigidity of the perinæum, the pubal shoulder is frequently thrown back under or behind the symphysis, and the sacral shoulder thrown out first.

Do the same diameters of the child's head present to the same planes of the pelvis, in the second as in the first position of cephalic presentation? The measurements are the same in both cases, but the occipital and biparietal diameters are changed about one fourth of a circle.

What circumstance offers the only interference to as ready a delivery in the second as in the first position? The presence of the rectum, sometimes impacted with feces.

Which way does the occiput present after restitution has taken place in the second position? To the right side.

Does rotation occur quite as readily in the second as in the first position? When the rectum is distended with feces, rotation does not in some cases take place so readily.

What difficulty does the third position present which is not experienced in the first and second positions? The fact that it has the occipito-bregmatic and part of the time the occipito-frontal diameter, presenting to the short or antero-posterior diameters of the superior strait of the pelvis.

Does rotation of the head take place in the third position? It does not usually, if it enters the pelvis in that direction.

Do the shoulders rotate? They mostly do.

Does restitution of the child's head take place in the third position? No; or at least only to a less extent than in either of the others, or only so far as the return of the chin towards the thorax may be included in the meaning of the word restitution.

Why is the first position more frequent than the second or others? It is not easily accounted for, though some think it is dependent upon the position of the upper portion of the rectum.

Is the second position any more unfavorable than the first? Yes; owing to the slightly greater degree of difficulty of rotation of the head, in consequence of the situation of the rectum on the left side of the sacrum.

Why are the third positions uncommon? Because of the difficulty of retaining two convex surfaces, the sinciput and the promontory of the sacrum in contact with each other.

What peculiar difficulty is liable to present in cases of the third position? The pressure of the anterior fontanelle against the promontory of the sacrum.

How do the shoulders rotate in cases of third position? Either right or left comes under each of the pubes.

Why is the fourth position more frequent than the fifth? Probably for the same reason which renders the first more frequent than the second position.

What is the opinion of Naegèle and some others, respecting the relative frequency of the occipito-right sacroiliac, or so called fourth position? That it occurred so often, as to be entitled to the second place of a proper enumeration of the positions of the occiput.

What is the mechanism of the labor in the fourth position? First, flexion takes place, though perhaps to a less degree than in the anterior varieties;—then the occiput rotates along the right posterior inclined plane; flexion is now increased, and the forehead is thrown behind the arch of the pubis. No extension can take place until the occiput has passed over the whole length of the sacrum, and the forehead has passed out under the arch of the pubes.

What other parts than the head and neck are involved in flexion, as the child enters the cavity of the pelvis? The thorax and shoulders.

What conditions are necessary in this case for favorable delivery? That the parts of the mother be very much relaxed, or the child small.

What accident is liable to happen to the mother, as the head passes from the inferior strait? Rupture of the perinæum.

Is the bladder more likely to suffer in these than in occipito-anterior positions? Towards the latter stages of labor it is liable to great distension from the forcible pressure of the anterior part of the head.

What change takes place in regard to the head

after it has cleared the perinæum in occipito posterior positions? *Revolution* backwards.

Which way does the face of the child turn when it has cleared the inferior strait in the fourth position? Towards the left thigh of the mother.

Under what circumstances may the forehead, and not the anterior fontanelle, come out under the arch of the pubes? When the child is small, or the perinæum much relaxed, or the coccyx very moveable.

In what direction do the contractions of the uterus carry the head of the child in the early period of the second stage of labor? Directly down into the hollow of the sacrum.

What inconvenience arises in reference to the body of the child? In the posterior varieties the child's spine bends under the contractions of the uterus, and therefore, the expulsive powers are less efficient than in the anterior position.

What is the mechanism of the fifth position? The bi-parietal and occipito-bregmatic diameters, corresponding to the oblique diameters of the superior strait, the contractions of the uterus force the occiput down along the left posterior inclined plane, and the bregma along the right anterior plane.

Which way does the face turn, after it has escaped the vulva? To the inside of the right thigh.

Does the forehead present any difficulty in its passage under the arch? It is believed by some that it escapes less readily than the occiput, though it probably does not, if the coccyx and perinæum offer no resistance.

Which is the most rare position of all the occipital presentations? The sixth.

Why does it occur rarely? Because of the extreme difficulty of having two rounded surfaces, like the occiput and promontory of the sacrum kept in contact with each other.

What is the mechanism of labor in the sixth position? The head is driven directly down the central

line of the sacrum without any rotation. The shoulders are rotated as in the third position, except that they are reversed.

POINTS PARTICULARLY TO BE STUDIED.

What are the two main points to be studied, in reference to the mechanism of all the positions? The characteristics of the first and the fourth positions, as containing the elements of the mechanism in all the other varieties.

ADDITIONAL POSITIONS.

Are there no other positions of the occiput worthy to be embraced in a systematic classification by authors or teachers? There are two others, viz.:—one, in which the occiput is directed towards the left side of the superior strait which terminates the transverse diameter, and the other, in which the occiput is directed exactly towards the other or right extremity of that diameter—in other words, they might be described as occipito-left iliac or seventh position, and occipito-right iliac or eighth position. They are sometimes called transverse positions.

CONVERTIBILITY OF THE POSITIONS.

Why are the two transverse positions of the head at the superior strait easily convertible into the first or second, fourth or fifth? Owing to the facility of the rotation of the head upon the inclined planes.

Why may the fifth position become converted into the first, and the fourth into the second? Owing to the fact that the anterior inclined planes are larger than the posterior inclined planes.

MOVEMENTS EXECUTED ON THE SHOULDERS.

What changes do the shoulders undergo as they are forced through the pelvis in a first position of the cephalic extremity? The right shoulder being already at the commencement of the labor in the right side of the pelvis, in advance of the transverse diameter, is

under the influence of the contractions of the uterus and the spiral form of the pelvis, forced to slide along the right anterior or ischio pubic plane till it is applied behind the symphysis or under the arch of the pubes. The left shoulder being behind the transverse diameter on the left side of the pelvis, is likewise carried down by the uterine forces acting on the body of the fetus, and partly by the spirality of the materials filling up the ischio-sacral notch, but especially, perhaps, by the influence of the right anterior inclined plane upon the opposite shoulder, it is obliged to appear upon the median line of the sacrum and coccyx, over which it is made to pass by the continued uterine and abdominal forces.

How do the shoulders rotate in the second position of the occiput? The left shoulder is carried down on the left anterior inclined plane, and becomes, at the inferior strait, the pubal shoulder, while the right one is carried along the right posterior inclined plane and becomes the sacral shoulder.

How are the shoulders disposed of in the third or occipito-pubal position? Either shoulder may engage on the right or left anterior inclined plane, and so be made to appear under the arch of the pubes.

What becomes of the shoulders in the fourth cephalic position? The left one being upon the right anterior inclined plane is carried downward and forward by the uterine and abdominal forces till it is brought behind or under the symphysis of the pubes, while the right shoulder is necessarily moved downward and backward on the left posterior inclined plane to appear at length at the posterior commissure of the vulva.

What may be said of the rotation of the shoulders in the fifth position of the cephalic presentation? That here of course the right shoulder is compelled to descend along the left anterior, and the left on the right posterior inclined plane, till they each appear at the vulva.

Is there any known law by which to determine which of the two shoulders shall descend on the right or left anterior plane, and the sixth or occipito-sacral position of the head? As in the third position, we have here no reason why one shoulder in preference to the other should descend upon the one or the other of the anterior, or on the opposite posterior inclined plane of the pelvis, consequently, we cannot in either the third or the sixth position, anticipate to which tuber ischii the occiput will necessarily be directed, nor how the shoulders will descend.

Are the rules which have been stated as to the manner in which rotation of the shoulders usually takes place in the oblique positions of the head uniform and without exceptions? No—for it has been observed that in some instances in which the process of the labor has not been interfered with, the shoulders have been found not to rotate at all, or the right shoulder has passed down on the plane different from that on which it would have been expected to rotate, and even in a few instances in which the occiput of the child had appeared at the arch of the pubes, the centre of the fetal dorsum has been forced to slide along the median line of the coccyx and perinæum.

How are the hips and the lower extremities usually disposed of in their descent through the pelvis? In some cases the hips obey the same law of rotation, as the shoulders, though this is not uniformly observed. The lower extremities are almost always unfolded, and extended before they pass through the canal and appear at the vulva.

ARRANGEMENTS OF THE CHAMBER AND BED OF THE ACCOUCHEE.

What kind of room should the patient select for her nursery during her parturient and puerperal state? It should be spacious and well ventilated, so circumstanced that light and noise can be excluded when necessary.

What arrangement should be made in reference to the bed? It should be so situated as to be accessible if possible at each side and the foot. It should have posts sufficiently high to enable her to place her feet against either one as may be desired, and if there be curtains, these should be kept so drawn up that the bed may be well ventilated.

What objection to her being delivered on one bed, and after labor transferred to another? There is often much inconvenience as well as hazard in making the transfer, as hemorrhage, &c. might be thus brought on.

How should you have the bed prepared for delivery? First, have the bed, if of feathers, properly flattened down, then place upon the middle portion of it upon which the hips will rest after delivery, a folded sheet, blanket, or any soft material to protect the bed below from the lochia, which may escape from beyond its immediate recipients. Then place on the lower sheet or blanket, fold the lower end of this in several short folds so near the middle of the bed, that when the patient is placed in her proper situation after delivery, this fold will be below her hips. Put on the top of this sheet, directly over the doublings beneath it, a few folds of soft, comfortable material, on which the hips will rest when the patient is placed up in bed after delivery, and which being more easily removed than the expanded sheet, may serve well to receive any discharges which may escape beyond the perinæal napkin. Place upon the lower portion of the bed, first an oil-cloth, or some other impervious material, and over this, several folds of clothing, as blankets, sheets, or something of this kind, so arranged as to cover principally, or entirely, the portion of the bed thus left bare by the folding up of the lower sheet. Bring the lower edge of these folds a little over the foot or edge of the bed, at which the accoucheur is to sit. Then place the pillows diagonally across the bed, that they will be comfortably under

the patient's head when she is sufficiently flexed. Replace the bed-covers,as sheet, blanket and spread, comfortable, or quilt, as the case may be, as though the bed had been made up as ordinarily; then fold the upper cover back to the farther side of the bed from which the patient will lay while in labor, back over this fold the free edge of the next cover, and so on till the last free sheet is disposed of in the same way. To that bed post against which her feet are to be fixed when she is placed on the bed, attach a towel or strong band, in such manner that her hand may embrace the loop of it when she is properly flexed. It is even better to pass a short round stick through the loop so made, that the patient may make equal draughts with both her hands during a strong bearing down pain.

What principal object should the physician have in view in giving directions for the preparations of the bed? That the patient may lie upon her left side so curved forward as to throw the axis of the body into nearly the same line with that of the uterus.

How should the patient be prepared to be placed on the bed? Her body clothing should be so adjusted that she need not have it all soiled. For this reason her skirts should be laid aside; her linen so folded up around her waist that it will be beyond the risk of discharges, a bandage suitable for encircling her abdomen after delivery, should be placed around her waist, and so pinned as to retain her linen as folded up; and next a sheet or blanket should be folded in double in the direction of its length, the thin edges of this fold should be placed in front of the abdomen, and carried round on each side to the middle of the back, or better still, one portion should be carried round the left side over the back, to meet the other portion on the right side, where it should be carefully pinned with a large pin, taking care to have the portion of the sheet or blanket carried round the body, so adjusted that the portion which is carried round the

right side will extend at least twice as far backward as that on the left. The night or bed gown, which should be a short one, can then be allowed to drop down from the shoulders to the waist. The patient should have stockings on, without any garters to retard the circulation, her feet should mostly also be protected by slippers. She should then, if the stage of her labor require, be placed upon her left side, with her hips within a foot of the lower end of the bed, her body flexed forward, her lower extremities drawn up, that her feet may be placed against the right foot post of the bed; the lower side of the sheet or blanket is then to be drawn out smoothly under her, while the upper portion is to be carried out also smoothly behind her; it will thus protect her completely from any exposure of her person; next over this may be drawn a suitable amount of bed clothes.

Is it important what kind of bandage the patient should have prepared for her use immediately after parturition? Notwithstanding the diversity of opinion and practice amongst physicians on this point, and the great variety of form and mode of application of this essential article by women, it is unquestionably important, that the principle to be kept in view in the use of the bandage, is that it gives support to the upper portion of the thighs, the entire pelvic, and the greater portion if not the whole of the lumbar, and abdominal regions of the body.

What form of bandage is best, to fulfil this indication? It should be made to fit exactly the curve or hollow of the back, spread out neatly over the nates, then be so contracted below as to be exactly adapted to the back part of the upper portion of the thighs, with the extremities long enough to overlap each other a few inches in front of the person, where it may be smoothly secured by strong pins or laced by a large needle armed by thread of sufficient size and strength to make the requisite compression upon the several

points from just below the pubes to the scrobiculis cordis, or the lower margin of the mammæ.

How can a bandage so constructed be placed around the waist of the patient, in such manner that it can be gotten down to its place after delivery without inconvenience to the patient, nurse, or accoucheur? Let the nurse or temporary attendant upon the patient extend this bandage upon a bed, fold it in three plaits or folds, of which the lower edge shall be the first, the middle of the bandage shall be the second, and the upper margin shall be the last or uppermost plait; this will reduce the plaited bandage to about the width of her hand and extended thumb. Let her then plait it in short plaits in the opposite direction, crosswise, or at right angles with the longitudinal folds; the whole bandage thus folded up she can now take in one hand and carry it around the waist of the patient, (so as to embrace the folds of the chemise previously adjusted,) till it can be met by the opposite hand; the two ends are next to be brought round upon the mass of folds of the under garment, and when it is properly secured by a single large pin it will be found to retain this part of the under dress completely above all ordinary risk of becoming soiled by the fluids which may escape from the uterus in the progress of the labor.

What is next to be done to cover the lower extremities of the patient while in labor? Adjust the sheet outside of this as explained in the answer to the question about preparing the patient for placing her on the bed.

What provision should be made in reference to the management of the child at its birth? There should be provided a proper ligature for the umbilical cord,—a pair of sharp-edged, but blunt ended scissors, should be at hand; also suitable clothing, in which to envelope the child when born. There should also be the means at command of raising the temperature if necessary—as for example, an abundant supply of warm water, and also some suitable stimulants, as spirits, aq. am-

moniæ, or something of the kind, to excite respiration if necessary.

What accommodation should be furnished the accoucheur? A chair to sit upon, some unctuous matter with which to lubricate his hand, and the soft parts of the mother; and several napkins, properly plaited or folded, for use as required.

What course of conduct should the accoucheur exercise while in attendance upon the parturient female? It should be such as would preserve her feelings free, and inspire her with proper confidence in him—he should remain calm under all circumstances, carefully avoid, by any action or change of countenance, exciting her apprehensions of an unfavorable termination of her case; he should offer candidly all reasonable prospects of a happy and safe delivery, though he should cautiously avoid any promise as to this or the time of its occurrence. He should suppress all unnecessary talking, or allusions to any other cases which may have been known, or reported to be fatal or hazardous; he should advise his patient against straining, or forcibly bearing down during the first stage, but strongly urge the necessity of it, during the second stage. He should carefully ascertain the state of the bladder and bowels, and direct accordingly; he should recommend his patient to remain up considerably, during the first stage, but to lie down, during the remaining period of labor. He should not remain constantly with her during the first stage, but not be absent from her subsequently until the whole process is completed.

What accommodation should be supplied to the accoucheur, when he is about to make an examination, or is preparing to assist the patient by receiving her child, &c.? The nurse should adjust a napkin around each fore arm, if he wish it, place a sheet, or folded cloth upon his lap, put within his reach several napkins, diapers or cloths, and a cup of lard or pure oil.

She should do this quietly, and he should take his seat with as little parade as possible.

Thus seated, and otherwise accommodated, what should he proceed to do? To make a proper examination, to determine the exact state of the case if possible.

PHYSICAL ENQUIRY INTO THE FACT OR PROGRESS OF LABOR—PATIENT RECLINING.

How should he make this examination? He should be seated with his right side to the bed; the nurse, or he with his left hand, should slightly and cautiously elevate the double fold of the sheet, which had been placed around the patient before she was laid on the bed; when a pain occurs, he should lubricate the index finger of the right hand, and keeping this finger flexed towards the hollow of the hand, at the same time that the thumb is strongly extended, (thus guarding the finger, from the risk of having the ointment on it rubbed off on the clothes, and subsequently perhaps, smeared upon his coat sleeve,) he should pass his right hand under the folds of the sheet, the double of which had been slightly raised by his left hand, or by the nurse. The left hand is then to be carried, exterior to all the covers, to the region of the right trochanter; at the same time, the right hand glided along, under the folds of the sheet in the manner directed, is to be passed a little posterior to the spot upon which the left hand slightly rests, viz.: upon the right trochanter; in this way the knuckle of the examining finger may with considerable certainty be brought to the sulcus between nates, or to the raphe of the perinæum, and then glided forwards, until it slips into the genital fissure over the posterior commissure, without bringing it in contact with the sensitive apparatus at the anterior commissure; when once the finger has gained this aperture, it may be extended along the vagina, with its ulnar edge towards the arch of the pubes, and thus cautiously applied to the orifice of the uterus, &c.

Although it is mostly greatly preferable that the patient should be upon her left side for examination, or for labor, is it not embarrassing to the accoucheur to make the touch or rupture the membranes by the finger applied to the orifice of the uterus as usually directed? The usual mode of applying the finger to the orifice of the womb, with its ulnar edge to the pubes does not permit the finger readily either to recognise the condition of the orifice of the uterus, the character of the presentation, nor to rupture the membranes, as may be seen in fig. 66.

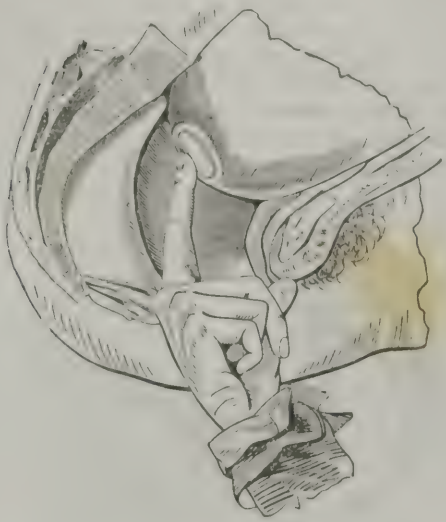
Fig. 66.



How may this difficulty be obviated? By changing the direction of the hand after the finger is inserted, so that by forced supination, or better still, by forced pronation, which is accommodated by a degree of corresponding motion in the arm and body of the accou-

cheur, the pulp of the right index finger can be brought much more effectively into relation with the parts than when confined to the ulno-pubal position.

Fig. 67.



What is the importance of making this examination at the time of a pain? First, that he may determine whether she is really in labor or not, and next to ascertain the degree of dilatation of the os uteri, and if possible the presentation of the child.

ADVANTAGES OF UPRIGHT POSITION.

Is it ever warrantable to make the examination of the condition of the os uteri, in the supposed incipient stage of labor, while the patient is in the erect position? There are many instances in which an examination in this manner would be less inconvenient to the patient and attendants, and because of the greater facility of

reaching the os uteri by the proper curve of the index finger, more accurate diagnosis of the condition of the os uteri and the impression of a contraction upon it may be obtained, than when the patient is in the horizontal position on her left side.

TIME AND MANNER—PATIENT STANDING.

What are the proper time and manner of making the examination by touch in this way? With a proper understanding of the greater advantage and facility of this method, provided the patient has not been already prepared to lay upon the bed for her delivery, and under the impression also from the character of the pains that the labor has not yet so far advanced as not to admit of her remaining up for some time longer, let the nurse or temporary female attendant quietly provide the proper napkin and lard or oil, and place them within easy reach of the physician. Let her next take her position by the left side of the patient as she sits, and when a pain occurs let the patient rise by the side of the nurse and repose slightly upon her, while the latter stooping forwards, gently collects the lower margin of all the patient's skirts, carries them forward and but very little upwards until they can be deposited upon the flexure of the physician's arm as he is proceeding to make the enquiry by examination. She will thus act in the double capacity of companion and assistant to the patient.

What should be the movements of the accoucheur in making the examination in this way? Having prudently seated himself near the right side of the patient, and with his right hand nearest to her, let him, upon the intimation that she has a pain and is about rising by the side of the nurse, anoint his finger, cast the napkin loosely over his wrist, carry his left hand over the right hip to the sacrum or loins of the patient to assist in giving her moderate support while the right hand (the index finger of which is properly guarded

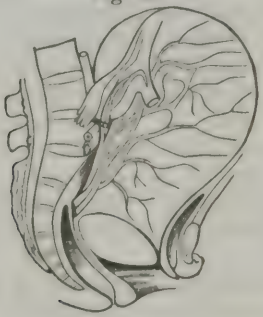
against the risk of having the lubricating matter rubbed off it) is carried upwards under the dress of the patient to the raphe of the perinæum or posterior commissure of the vulva, from which its introduction into the vagina can usually be easily effected without distress to the patient or embarrassment to himself, the os uteri easily reached, and its condition mostly made out with much precision.

How much time is allowed for this examination in the erect position? Only so much as is occupied by a pain or uterine contraction.

WHEN TO BE PUT TO BED FOR THE COMPLETION OF LABOR.

When should she be *put to bed* for the completion of labor? When you believe the os uteri is nearly or entirely dilated, as shewn in fig. 68.

Fig. 68.



DUTIES OF PHYSICIAN, NURSE, AND PATIENT DURING THE SECOND STAGE OF LABOR.

Why should you have her flexed forward? That the axis of her uterus may be thrown into a line with the axis of the superior strait.

Is it easy for you always to determine the *Presentation* of the child, previous to the rupture of the mem-

branes? It is mostly easy to do so, unless it be a presentation of the face, side, or back, or breech of the child.

Is the *Position* easy to be recognised through the membranes? In general it is not, until after they are ruptured, and the presenting part fairly engaged in the pelvis.

Does labor usually proceed more rapidly after the rupture of membranes, if the os uteri be properly dilated? It does, perhaps in consequence of the shortening of the muscular fibres of the uterus, and their contact with the firmer and less regular surface of the fetus.

How should you rupture the membranes? By pressing the point of the finger into the fold of the membranes, if the bag of water be large; if not prominent, the nail of the finger should be directed towards the presenting part of the child, and then by a little vibratory motion gradually wear them away. This must be done with great caution, lest the scalp should be torn in the process.

Should you use any precautions for your protection from the sudden escape of the liquor amnii, when you open the membranes? The wrist should be enveloped in a napkin, and one should also be applied to the perinæum and vulva, so that at the instant you burst the membranes, you may withdraw the finger, and apply the napkin to absorb the discharge.

Should you change the saturated napkins privately? They should be either handed quietly to the nurse, or laid secretly at the bottom of the bed-post without calling aloud to any one about them.

Should you after this time keep any thing applied to the breech of the patient to absorb the discharges? This should be done by applying successively folds of a sheet, or better still, by changing napkins as fast as they become saturated. By this plan, the patient is rendered less uncomfortable and the bed less soiled.

If the membranes require to be ruptured artificially

at what period of the pain should it be done? At the commencement if possible.

Should the accoucheur interfere with the process of labor, during the second stage? He should let it alone, if he have ascertained that the position is correct.

When should the patient be encouraged to assist the expulsive effort? As soon as the os uteri is dilated, and the first stage complete.

If she do not know how, what instructions should you give her? To take in a full breath, and bear down the whole time of a pain;—to bend herself forward, &c.

How can she bring her accessory powers most advantageously to co-operate with the pains or relieve contractions during the second stage of the labor? In by far the greatest number of cases the efficiency of the accessory aid is increased by giving the patient a firm purchase with her feet against the post of the bed, or some other immoveable point, while her extended arms may reach the same point by means of a well adjusted cord, napkin or any similar medium, with a little round short stick passed through the loop of it, so that she can flex the fingers of a hand on each side of the towel or cord, without the risk of contusing them by irregular pressure during her bearing down effort.

Should she be careful to relax herself, as soon as the pain is off? This should be insisted upon in most cases.

What kind of drink or other comforts should she have to revive her during the second stage? Cool water, lemonade, toast water, carbonated or mineral water, gentle fanning and such changes in the thickness of her covers as her condition may require.

When should the nurse adjust a large cushion or rolled up pillow between the limbs of the patient?

When the accoucheur has observed that the presenting part of the child presses on the perinæum.

In what direction should the pillow be placed? From ancle to knee, so as to be exactly longitudinally above the left, and below the right leg.

What is the proportionate force of the uterine contractions, during the labor? Inversely as the size of the organ, according to the calculations of some obstetricians.

When is the force of the contractions of the uterus at its acme? When the presenting part is about to pass through the genital fissure.

Is there any danger of rupture of the perinæum in most cases of labor? It has been known to rupture during the progress of natural labor.

How must the perinæum be supported? It is best done by the accoucheur, applying the palm of his hand over the perinæum, and keeping his wrist directed towards the child's head.

What should be interposed between the hand and perinæum? A napkin which will receive the feces if any escape.

In what direction may the perinæum be ruptured or lacerated? From the fourchette backwards; through the centre; or at the anus.

Is it ever necessary to resist the descent of the child, when the perinæum is in danger? It is, if the perinæum is not relaxed.

When is the greatest danger of laceration? At the moment that the parietal protuberances are passing through the vulva.

WHAT TO DO WHEN THE HEAD HAS PASSED THROUGH THE VULVA.

When the head escapes, what attention should be given in reference to the child? To ascertain whether the cord is around the child's neck, and if so, to attempt to loosen it by drawing gently upon one extremity of it.

Suppose the cord to encircle the neck so closely as to interfere with respiration or the quick descent of

the child, what should you do then? Carefully divide it, and then expedite the delivery by traction by the head and neck of the child.

Should the head of the child be supported after its extrusion? It should repose in an expanded hand of the accoucheur.

What attention should be given to the shoulders, if they do not readily rotate? Assist the rotation by pressing the proper one under the arch and the other into the hollow of the sacrum.

Under what circumstances may the accoucheur draw a little upon the head? When the perinæum offers a strong resistance to the exit of the shoulders.

In what direction should he draw upon the head? If a shoulder be thrown up behind the symphysis pubes, the traction should be towards the sacrum, sufficient to disengage the pubal shoulder; but if this be already free, the traction may be made in the direction of the axis of the vagina.

Having cleared the shoulders from the grasp of the perinæum, should you hasten the delivery of the rest of the child? No; its delivery should be rather retarded, in order to allow the uterus to contract well upon it and the placenta.

What should you do as soon as the body is extruded? Carry the child round and place it in such a position as to be free from the discharges of the mother.

What attention should you give the mother as soon as the child is born? Calm her excitement and ascertain that the uterus is contracted.

How should you do this? Speak kindly and soothingly to her; then place your hand on the abdomen and feel what the condition of the uterus is—if it do not contain another ovum—make moderate compression upon it to insure its contraction upon the placenta and membranes.

TYING AND DIVIDING THE CORD.

Is it proper to put the ligature on, and to cut the cord immediately after the child is extruded? It is better to wait until respiration, and the capillary circulation are established, thus if the child cry, or respire freely, and a red or arterial color may be seen on the face and other parts of the skin, the ligation and division of the cord may be made with propriety.

What is the object of applying a ligature upon the cord? To arrest the circulation in the cord, and prevent hemorrhage from its vessels when they are divided.

How many ligatures should you place upon the cord? One ligature only is necessary in the great majority of cases; some practitioners think it proper to apply two ligatures for the purpose of cleanliness, and to avoid the possible risk of hemorrhage in case of two placentas inosculating with each other.

At what distance from the abdomen should the ligature be applied? About two inches.

What precaution should you take in relation to the possibility of the occurrence of umbilical hernia? See that this does not exist, or if it does, apply the ligature sufficiently far beyond it.

In case you adopt the better plan of putting only one ligature upon the cord, what had you best do with the extremity of the placental portion of it? Wrap it loosely in one end or corner of a napkin which had been previously plaited transversely and laid upon the right hip of the patient.

MODE OF RECEIVING AND DISPOSING OF THE CHILD.

In what manner should you take up the child to give it to the nurse? The best plan is to have a napkin so folded and applied near the breech of the mother, that with one hand one of its extremities can be placed under and support the head as soon as it is extruded; as the body passes out, these folds are gra-

dually expanded until the whole child is extended upon it. Then as soon as the cord is divided the child is to be enveloped in this napkin, and thus easily lifted to the receptacle held by the nurse, for as the child is usually covered by a very slippery or pasty matter, it is often difficult or disagreeable to handle it properly. If, therefore, the napkin be not used, it will be found perhaps most convenient to pass the palm of one hand behind the thorax and nape of the neck, while the other is passed under the thighs, and the legs embraced with the index finger between them. It has been suggested as an improvement upon this method, to pass the palm of the hand under the thorax, having its radial edge towards the chin of the child, and thus raise it up from the bed to the receiver held by the nurse. The child is thus easily held by the hand, and is thus for a moment kept in a position nearly as much flexed as when in utero.

How should the nurse receive and dispose of the child? She should be provided with a large piece of flannel or soft warm cloth, which she should present at the left side of the accoucheur: she should then envelop the child and retain it in her lap, or place it in some safe situation, till she is prepared to wash and dress it.

CONDITION OF THE UTERUS IMMEDIATELY AFTER COMPLETION OF THE SECOND STAGE OF LABOR.

Where may you expect to find the fundus uteri after the extraction of the child? Most frequently in the umbilical or hypogastric region, though occasionally it is met with in the left iliac fossa.

Suppose you find the uterus firm, should you feel uneasy, however large it may be? If it be very firm and somewhere below the umbilicus, we perhaps should not feel uneasy, but if larger than that, we should suspect twins, or the presence of blood between the uterus and placenta.

MANAGEMENT OF THE PLACENTA.

Should the woman be expected to deliver herself of the placenta? In the majority of instances the uterus spontaneously expels it into the vagina.

How many pains does it usually require? Two, three, or four.

WHAT TO DO TO PROMOTE THE DELIVERY OF THE PLACENTA.

Is it ever necessary to stimulate the uterus to contract, to expel the placenta? It is sometimes necessary to do so by friction. It is always proper, and often indispensable that the hand of the accoucheur or nurse should be carefully applied over the uterine tumor till the placenta, membranes and the coagula, if any, be clearly expelled.

Should you ever pull at the cord, unless you are very sure the uterus is well contracted? Never more than to draw the cord into a right line.

What danger attends the practice of strong traction upon the cord? Rupture of the cord, hemorrhage, inversion of the uterus, &c.

Under what circumstances may you assist by acting on the placenta, through the medium of the cord? When the uterus has remained some time torpid and will not contract.

Is any rule of time to be allowed for the spontaneous delivery of the placenta? Opinions and practices appear to be very variable on this point, though it is probably rarely necessary to wait beyond twenty or thirty minutes after the birth of the child.

In what direction should you act upon the cord, or the placenta? Always in the axis of that part of the uterus or pelvis in which the placenta is situated.

How is this to be done? By passing up a finger and allowing it to act as a pulley.

In what direction when the placenta is in the vagina? In the axis of the vagina. In the axis of the

inferior strait, at first, and afterward along the plane of the perinæum.

Should you ever hook your finger into the placenta, when it comes within reach? It may be proper to do so in case the mother does not expel it The accoucheur should always carry it backward toward the sacrum and the perinæum.

HOW TO RECEIVE AND DISPOSE OF THE PLACENTA.

When you get the placenta partially through the vulva how should you act upon it to secure the delivery of the membranes? Retard its expulsion from the vulva; then rotate it upon its axis to twist the membranes into the form of a cord.

What is probably the neatest and most appropriate mode of receiving and disposing of the placenta when delivered? As it comes down through the vulva let the plaits of the napkin, which had been placed upon the right hip, under the sheet, be frequently drawn upon as the mass is expelled, so that by the time the membranes and any coagula shall have escaped, the whole may be enveloped in the napkin, the outer folds of which being almost entirely in a dry condition, it can be handed to the nurse, or any other attendant, or laid quietly away by the physician himself.

CLEARING THE PATIENT AFTER COMPLETING THE DELIVERY.

What is meant by the phrase of the lying-in chamber, "clearing the woman?" The complete removal of the placenta with its membranes, and of all the coagula and other discharges which are to be found in the vagina and about the breech of the woman, as well as the application of a soft dry napkin to the vulva.

What cautions should be observed in reference to the placing of the woman in her proper situation in bed after delivery? Every attention should first be

paid to "clearing" the woman—a soft napkin should be applied to her vulva—the bandage put properly over the hypogastric and pubic regions—she should then be carefully slided up in bed, in the completely horizontal position, without being allowed to raise herself up.

APPLYING THE PERINÆAL NAPKIN.

How can the napkin be so applied as to be kept in gentle contact with the vulva to receive the discharges as they escape from the vagina? Let one of the soft napkins, at least one-third of a yard wide, be plaited in small plaits, in the direction of its width, and so adjusted that its middle portion will be applied to the vulva, while one extremity is carried forward upon the pubic region, where it can be temporarily retained, by withdrawing the pillow from between the knees, and allowing the thighs to approach each other; at the same time the other end can be carried over the perinæum and the sulcus between the nates to the sacrum, upon which the extremity will be expended.

How can it be retained in this situation while the patient is subject to any change of position, as that required for adjusting the pelvic and abdominal bandage and placing her up in bed? This perinæal napkin may be supported with a temporary fold or two of the dry clothing on which she was delivered, so long as she remains on her left side.

ADJUSTMENT OF THE PELVIC AND ABDOMINAL BANDAGE.

What is next to be done? While the physician is engaged in making the proper ablution of his hands, let the nurse or some other dextrous attendant unpin the sheet which had been placed around the patient, and draw the upper portion so far forward on the pa tient's right side, that it may be quite loose;—directly after this has been done she should unpin the bandage, and seizing the lower edge of the upper of the

three folds in which it had been arranged, and carry it down on the bed, considerably below the seat of the patient. By this time the physician or some other person whose care and prudence can be relied upon, may take hold of the flexed knees and assist in turning the patient, first on her back, and next partially on her right hip, so that the bandage can be unfolded and brought smoothly down on the back and left side, at the same time that the end of the perinæal napkin is made smooth and strait upon the sacral portion of the pelvis;—dry cloths being neatly placed over those which were soiled during the labor, the patient may be returned upon her back, gently extending the limbs, the two ends of the bandage, which, by this plan, will be found to adapt themselves to each other, can now be overlapped on compresses of greater or less thickness, as required, and neatly pinned, or better still, securely laced with a strong needle and large thread, as before mentioned.

Should this bandage be applied very tightly? If the uterus has well contracted into a small globe in the hypogastric region, the bandage is needed only to give support from without to substitute the distension to which it had been subjected from within:—but if the uterus appear indisposed to contract firmly, or if there be any signs of hemorrhage, it will be proper to draw the bandage tightly over the patient's pelvis and lower part of the abdomen.

Is it important whether the bandage is pinned or laced from below, upward, or in the reverse direction? Opinions and practices differ in respect to this. Some thinking it an object to make the intestines descend quickly towards the pelvis to the position they occupied previous to the latter periods of pregnancy commence the closing of the bandage upon the epigastric region, and thence descend as low as they deem expedient. Others considering the faintness which the patient often experiences after delivery depends partially, at least, upon the sudden return of the bowels

out of their places of confinement by the recent pressure of the uterus, begin the process of closing the bandage from below the pubes upwards to the lower margins of the mammæ, but leaving it rather less tight above than below. Whatever theories may be indulged in, in this matter, the general experience is, that the patient appears the soonest to begin to derive comfort when the upper part of the thighs are bandaged first, and it is probably true, that in most cases it is best to begin the tightening of the bandage from below upwards.

HOW TO PUT PATIENT UP IN THE BED.

How long should the patient remain in the flexed position on this part of the bed after delivery? Unless she has been greatly prostrated by long or violent labor, or by hemorrhage, it is most humane, to have her placed comfortably upon the dry part of the bed which had been previously prepared for her as a resting place. Unless, therefore, she be in the condition mentioned, or there be a deficiency of proper assistance to slide her without the least effort on her part, she should certainly be placed up in the position ultimately intended for her as soon as practicable.

How may this be done with the least possible fatigue to herself and embarrassment to the attendants? Let her be covered by a sheet or blanket, from her shoulders to her feet, thrown into longitudinal folds or plaits, so that in width it will just cover her person: if she be a small woman and on a low bed, it may be possible for a strong woman or the physician himself to convey her to her appropriate place, while the nurse is attending to the removal of the soiled bed and sheet which were under and about her; but if, as is perhaps most commonly the case, the bed is high, it will be best that the physician or the husband should, with one foot on each side of the patient, and a hand in each axilla, be prepared to lift the greater part of her weight, and by an adroit motion carry her half way

to the spot intended for her to occupy during the first hours of repose; the nurse, meanwhile, should have laid off from the hips and limbs of the patient, the sheet or blanket which had surrounded her, (keeping her of course carefully covered by the loose one which had been just placed upon her,) she should take the heels of the patient in the palm of one hand, while with the other, she should seize upon the margin of all the clothes which are to be removed from under the patient. At a signal understood between the two persons thus employed in removing the patient, the nurse assisting to place her up, quickly draws out from under the patient all the clothes upon which she had laid across the bed, while the other hand is also aiding in sliding her up. Having by this co-operative movement placed her half way, or perhaps rather more, towards the place for her head and her hips, and having all the soiled clothes removed, the nurse can now extend her left arm under the cover, up the spinal column of the patient, take hold of the lower edge of the folded chemise, and, at the next signal given, to complete the upward movement of the mother, she will find it not difficult to bring down the back and the lower portion of her under-dress.

Is it not often well to leave the under garments of the patient folded up for some time after putting her up in bed till after the first discharges have time to escape from her body? With the consent of the patient, it would usually be well to allow the chemise to remain for a few hours above all risk of being soiled, should the napkins applied be not quite sufficient to collect all which might escape. By this arrangement it will also be more easy for the nurse to have access to the hips of the mother to ascertain the condition of the napkin, and to change it if necessary without much if any disturbance to the weary woman.

What dangers may arise from close compression of the vulva by the napkin? It may arrest the discharge of the blood from the vagina, plug it up by a coagu-

lum, and thus obscure hemorrhage in some cases. The cloth should therefore be applied loosely but closely to the vulva.

What position is most comfortable for the patient when she is carried up into the place intended for her to lay in after delivery? She mostly prefers to lay on the left side with her limbs partially flexed, and her head on a pillow of moderate height; and it will contribute to her comfort to have a pillow placed along her back so as to support her loins and shoulders.

What other attention should she next receive? The nurse having adjusted the body, bed and head-dress comfortably, she should be supplied with some cool drink or light nourishment.

May she rise up in bed to take it? She should not be allowed to rise up for any purpose for several days after her delivery. Her drinks and fluid nourishment should be given her from a spout-cup or a tube, or by a spoon.

ATTENTIONS TO BE GIVEN TO THE CHILD.

Which should be attended to first after delivery, the mother or child? Circumstances will necessarily determine, whether attention may not be given to both simultaneously, if there be sufficient assistance in the room, or whether mother or child shall have the precedence of the care of those present—generally the child will suffer little or no inconvenience by remaining wrapped warmly, until after the mother shall have been fully attended to, while perhaps, in most cases, it would be unsafe to withdraw all attention from the mother for the sake of washing and dressing the child as soon as it is born.

WASHING THE CHILD.

Should the practitioner pay attention to the mode of washing the child? He should carefully superintend this process.

How should the nurse get rid of the sebaceous mat-

ter which mostly covers it? By the free application of unctuous matter, the best of which is animal oil, as lard, &c.

What kind of soap should be used? It should be mild, bland, and not strongly alkaline.

Should the nurse use brandy, &c., on all occasions? It is by no means necessary on all occasions. It need not be used unless the child is in a very feeble or asthenic state.

Cannot the child's skin be made clean, in many cases, without the use of water at the first washing? In many and perhaps in most instances, the free application of lard upon every part of the surface of the child will so completely detach all the matter which was adhering to it, that it can be wiped perfectly clean afterwards, by a fine sponge, or soft flannel cloth. It is probable that by the general adoption of the plan of making the first ablution of the child with lard simply, it would suffer less than it often does by the use of water and soap, which evaporates so rapidly as to chill the surface greatly, unless the nurse be very careful in drying and wrapping it up, as she performs the duty in this way.

DRESSING THE UMBILICAL CORD.

How should you dress the cord? Take a piece of linen about six inches square, cut it in a central hole, through this draw the umbilical cord, then fold this linen up in such a manner as to envelope the cord completely, keeping its cut extremity directed toward the child's chin. A more simple method, and one which we prefer to this, is, to take a piece of linen about four inches wide and ten long, and cut into the middle of one of its extremities, a slit about an inch long. Holding the cord at right angles with the body, this slit is to be drawn from above downward, to fit closely to the root of the cord. This is then to be turned up toward the chin, one of the lateral portions of the linen is to be turned over in front of it, and then the

other in the same manner. Next raise the upper end of the cord, and fold these three layers of linen under it, until there will thus be seven thicknesses of the linen interposed between the cord and the teguments of the abdomen. The balance of the linen folds, if any, may be brought down in front of the cord. It will in this manner be sufficiently isolated from the body of the child, and the dressing can be easily renewed if necessary. Over this, as in the other case, a roller of flannel, just wide enough to reach from the axillæ to the hips, is to be fastened.

What is the object in thus enveloping the cord? To prevent the contact of it, as a putrefying mass, with the surface of the abdomen, and thus causing great irritation of the skin.

USES OF THE BANDAGE UPON THE BODY OF THE CHILD.

What is the principal object of the belly-band or roller? Merely to support the cord in its proper situation, and retain the dressings upon it.

How long should this bandage, binder, or roller be? Merely sufficient to encircle the body once and overlap to be secured by pinning or stitching.

Should you allow the nurse to pin the roller tight? It should never be pinned so tight as to interfere with muscular motion, whether respiratory or otherwise.

DRESSING THE CHILD.

How, in other respects, may the child be dressed? According to the desire of the mother or friends, provided the clothing be such as to keep the child sufficiently warm, and allow it sufficient freedom of motion.

Are any cautions necessary for the nurse to observe in reference to the diaper or napkin for the child's hips? The nurse should be careful that the diaper should not be so thick and so stiff as to keep the limbs

too widely separated, or too much excluded, or that the mass of it be too heavy for the newly born child; the napkin should therefore be made of soft old materials, and as nearly as can be calculated, be of size and thickness merely sufficient to receive the small quantities of meconium and urine the child may discharge in the course of only a few hours before it may be convenient to change it.

PRESENTATION OF THE CHILD TO THE MOTHER.

If the mother have been put up carefully and comfortably in bed, as soon after delivery as could be done after the proper adjustment of her napkin and bandage, and have had time to repose while you were superintending the cleaning and dressing the child, what should be your next duty in the lying-in chamber? To receive the child from the lap of the nurse, to hold it, until she shall have cautiously opened the bosom of the mother and prepared the nipple of the lower breast, for its application to it,—then allowing the mother a few moments to embrace her offspring, put it so closely to her side that its head may repose upon her lower arm, and that its mouth may embrace and suck the nipple.

Why not allow the nurse to give it some butter and sugar, some molasses and oil, molasses and water, or sugar and water, or a little of its mother's food, as a table spoonful or two of gruel, panada, or cracker-victuals? Because none of these things are ever necessary for a child just born, and in nearly every instance in which improprieties should be indulged in, the child would be subjected to great suffering, from incapacity to assimilate such food.

How long should the child be permitted to remain drawing the nipple? If the mother be strong, if she have a firm well developed nipple, no inconvenience will probably result to her from allowing the child to draw at it for several minutes, whether there be any milk in the breast or not; but if the nipple be ten-

der, the mother nervous, irritable, and the efforts of the child excite violent uterine contractions, it should be taken from her and placed in a soft warm bed by itself, that both it and the mother may be allowed to have repose in sleep.

If the child cry much, and the mother has no milk in her breasts, how should it be treated? Under such circumstances it may be proper to allow the nurse to give it a few tea-spoonsful of simple water, or water with a little sugar in it, or perhaps a little milk to which an equal quantity of boiling water has been added, and allowed to cool.

ADMISSION OF COMPANY INTO THE LYING-IN ROOM.

When would it be proper to admit company, as members of the patient's family, relatives or intimate friends into her room? Certainly not until she shall have recovered from the fatigue of her recent effort, and the immediate dangers of her puerperal condition —the first certainly requires several hours, and the last mostly several days.

DUTIES OF PHYSICIAN AND NURSE TOWARDS THE PATIENT'S HUSBAND.

What regard should be paid to the husband during the labor and at the time of delivery of his wife, and the birth of their child? If he be a prudent man, of good moral force, competent to comfort, encourage and aid in sustaining his wife through the conflict of parturition, and to calm and compose her in the excitement or ecstacy to which she is often subject upon delivery, it will in most cases be the duty of physician and nurse to make his presence acceptable during the whole time it is expedient for the physician himself to remain with the patient, inasmuch as the conjugal relation, strictly interpreted, would enjoin the parties mutually to assist each other, at this as well as any other period of matrimonial life. Since, however, the accidents and dangers to which the woman

is subject during this and its immediately succeeding eventful epoch, are often of the most important character, it is requisite to place the management of the case in charge of some one, who, by proper training, ought to possess capability for acting in emergencies which may occur in this condition, manifold more wisely than the ordinary citizen, whatever his general intelligence. The husband, whether present or absent, must regard the physician and nurse as substitutes, or attorneys to whom is deputed the entire control of the affairs of the chamber and nursery for the time being—and his conduct should be regulated by a high sentiment of propriety, or by the suggestions of the physician. Doubtless every husband who possesses the proper attributes of a man, will desire to be in or near his wife's apartments during the diversified conflict of body and soul to which she will be subject, during the hours of labor, and at the moment of childbirth; but whether he shall be actually present during the whole of this period, may be a question of expediency to be settled mutually by her, himself and the physician. The latter to whom is, or ought to be delegated the responsibilities of the case, under such circumstances, must have a scrupulous regard to the introduction of a properly co-operative influence, or the exclusion or removal of any which, in his opinion, may prove detrimental to the safe conduct of the affair.

Is it proper that the husband should be introduced into the room, by the time the mother and the child are placed together in the bed? It is due to the husband, first that he should have the satisfaction of realizing the happy termination of his anxieties, and in the next place it is due to the nurse and to the patient that an opportunity should be afforded to her of having the instructions of the physician respecting the hygienic treatment of the mother and child made in the presence of the husband and father that he may fully understand, and co-operate in executing them.

TREATMENT OF THE PATIENT IMMEDIATELY AFTER DELIVERY.

Should you keep the patient in the horizontal position for several days? This should be done to avoid the risk of hemorrhage or of prolapsus, &c.

What kind of diet may she be allowed? Very light—as gruel, panada, barley water, toast water, crackers, &c.

What kind of drinks should she have, and at what temperature should they be administered? Cool, simple drinks. If feverish, water with sweet spirits of nitre.

AFTER-PAINS.

Is the woman subject to pains subsequent to delivery? Most women recently delivered, except some of those with their first children, have attacks of spasmodic uterine pain, a short time after delivery.

What is their character? They are spasmodic, alternate, and neuralgic.

What is the usual cause? Some think they are owing to the presence of coagula in the uterus.

Do they ever depend upon the particular condition of other organs? They sometimes no doubt depend upon certain conditions of the stomach, bowels, and even bladder.

Should you always inquire into the cause before prescribing for them? This should be done with much care, as the indication of treatment differs greatly.

How should you treat them, when they depend upon the condition of the nervous system? They should be allayed by anodynes, the best of which are camphor, morphia, &c.

Should you ever direct warm injections for the relief of after pain? Whenever they appear to depend upon the existence of any irritation in the bowels, as flatulence, fæces, &c.

Are there any cases in which vascular depletion becomes useful? Whenever there is a plethoric or feverish condition of the system.

Is it ever necessary to evacuate the bladder by the catheter? It is necessary to ascertain the condition of the bladder, and if full, relieve it by the catheter.

Are there any cases of *misplaced* after pains? When pains attack the region of the coccyx, the knee, other joints, they may be so considered.

How would you treat this variety? By the free use of anodynes.

Are after pains ever dependant upon the want of tonic contraction of the uterus? They probably mostly depend upon inefficient contraction of the uterus; and are, therefore, to be obviated by procuring the complete contraction of the organ. They are often prevented, or if they occur, may be often relieved by free, long continued friction over the uterus soon after delivery. It is also strongly recommended by some teachers to examine the vagina and os uteri, and if there be coagula in them carefully to turn them out.

USUAL CHANGES IN THE CONDITION OF THE PUERPERAL WOMAN.

What duties does the accoucheur owe to the puerperal woman during several consecutive days after her parturient effort? He should inform himself through the medium of the nurse respecting the condition of the uterus as evinced by the frequency or severity of the after pains; he should ascertain the condition of the bladder, and if the patient has not been relieved, within ten or fifteen hours after the delivery, he should, if necessary, draw off the urine by a catheter.

URINE.

How long can a patient be left without passing her water? Some patients after delivery have retained the urine for thirty-six or more hours without much

pain or inconvenience, while some others feel occasion to pass large amounts of fluid from the bladder shortly after delivery. As the rule of conduct of the physician he should satisfy himself by enquiry whether or not she suffers any inconvenience in this respect; and if she do, he should, if he think it safe, encourage her to make the effort in the horizontal or partially inclined position, while he is in another room. If she fail to urinate, he should afford her aid by a catheter. If, however, she feels neither inconvenience from retention, nor desire for relief, it may be safe to delay the use of instrumental means for a few hours longer.

LOCHIA.

What is the usual amount of lochia during the first twenty-four hours after delivery? While it is very variable in different cases, and even in the same patient at different times after delivery, it may perhaps, be taken for an average, that she will have an occasion to employ the nurse to remove six napkins well filled during the first six hours; four during the second; two in the third, and one in the last six of the twenty-four hours after delivery.

What diminution will probably take place during the next twenty-four hours? She will probably require upon an average one napkin every six hours.

MILK.

What is the usual condition of the lactiferous apparatus of the woman recently delivered? It is variable—some women having the gland in an active state, and secreting milk freely, while in many this function remains dormant for two, three, four, or five days after the birth of the child.

What changes of condition does the patient usually experience upon the effort of the glands to secrete milk? Diminution, or temporary suspension of the lochia, more or less chilliness, with flushes of heat—sometimes a real shivering fit, followed by violent fe-

ver, with severe headache, pain in the back, &c., followed by perspiration and fulness of the breasts, or the free flow of milk from the nipples.

TORPOR OF THE BOWELS.

What is the usual condition of the bowels of the puerperal woman? They are usually torpid for several days, especially till after the milk is secreted. Upon the establishment of this function they sometimes act spontaneously, but in many patients they require to be aided by some means.

GETTING UP.

When may the patient get up from her bed after parturition? In relation to the precise time when a patient may venture to resume the upright position no settled rule can well be established, and the *physician* having charge of the case must determine after due consideration, when he can instruct or allow the *nurse* to take the patient from her recumbent to an upright position. However urgent the patient, nurse or friends, may be to withdraw all restraint to her getting about soon, and however numerous the cases they may cite in which such indulgences have been tolerated with impunity, it is certain that too many dangerous and even fatal consequences have ensued upon premature rising *from* or even *in* the bed to excuse the physician in countenancing much latitude in this respect. Women who have risen upon their elbows to embrace their husbands upon their introduction into the chamber after delivery—women, who have been prompted by their attendants to rise while the bed and personal clothing were changed—women, who with a determination to sit upon a chamber-vessel to urinate shortly after parturition, and women also who have at the recommendation of nurses sat up in bed for the purpose of evacuating something which caused a nisus in the perinæal region, have forfeited their lives or their health, for this departure from ap-

propriate conduct after their organs have undergone the rapid changes incident to parturition. It ought, therefore, to be a part of the physician's duty to keep a vigilant eye to the condition of his patient, to determine as to the time when, as well as the manner in which, she is to be gotten out of, or even lifted up in bed. Whenever practicable it should be the rule of duty to keep her in bed till her milk is fairly secreted, and the free discharge of the lochia has somewhat abated, and the soreness and stiffness have entirely subsided and she is quite able to turn herself from one side of the bed to the other. After this, which will usually require from four to five days, she might be allowed to sit upright in the bed, or possibly be lifted from one bed to another till both the bed and her body clothing have been thoroughly changed. From this period, if no accident have happened, it will be proper to allow, encourage, or direct her to sit up in bed, not only to nurse her child, but to make her ablutions and take her food not only for longer periods, but also more frequently. By the eighth or ninth day, she mostly may with safety be allowed to be seated in her arm chair, and to recline backwards, or to sit quite upright, for an hour or two at a time. After the lapse of one or two days spent in this training and testing her condition, she may be assisted by some one to walk a little, and shortly after having acquired sufficient strength by these means, she may begin gradually to resume her household duties.

USUAL CONDITION OF THE CHILD DURING THE FIRST FEW DAYS AFTER ITS BIRTH.

What is the usual condition of the child during the first few days of its birth? In the early hours of its extra-uterine life it is most inclined to remain flexed upon one side nursing or sleeping, expressing no uneasiness, except when its clothes bind it too tightly or its diaper has become wetted or soiled. In a sufficient number of cases, the child will be found to cry more or

less, even when there are no apparent causes of disturbance, and both mother and nurse become so annoyed or distressed by it as to be tempted to resort to some artificial means of quieting it by giving it warm teas, as those of catnip, aniseed, &c., or under an impression that it is hungry, will feed it with gruel, bread and water, or boiled crackers, &c., neither of which can be suitable food for it.

STATE OF BOWELS.

What changes do its alvine discharges undergo? At first they are dark, have the consistence of tar, or thick molasses; in the course of two or three days they often become greener, thinner, and interspersed with yellow specks, and shortly after it can get a full supply of milk, they become almost uniformly yellow. The child while these changes are taking place is usually less disposed to sleep, often expresses much uneasiness, and even sometimes suffers greatly from colic, or tenesmus, and diarrhœa.

CONDITION OF SKIN.

What changes does its skin undergo? In a day or two after birth the skin often presents a straw or orange color, even the adnata become tinged, but commonly, when the intestinal secretions assume the proper yellow and consistent appearance, this yellowness of the skin subsides. Very frequently in the course of a few days after birth the skin becomes covered in places with a miliary eruption, but still more commonly the exanthem is in red or yellow patches, a variety of cutaneous affection technically called strophulus intertinctus, or in nursery language red gum or red gown.

DECADENCE OF THE CORD.

When does the umbilical cord usually separate from the umbilicus or navel? The period of the complete decadence of the cord is variable, ranging from two

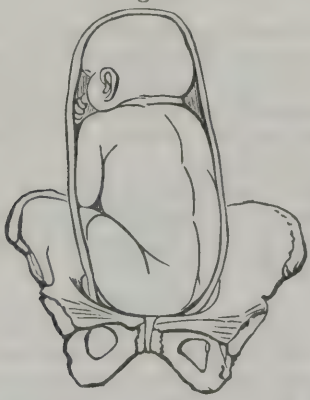
days to more than two weeks. Perhaps the average time required for the sloughing away of this extraneous matter is about five days.

What is the usual condition of the umbilicus itself at the time of the falling off of the cord? In most cases which have been properly nursed, the umbilical surface exhibits a moist slightly red appearance which dries up, and is covered by a skin in a few more days.

SECOND CLASS OF PRESENTATIONS—PRESENTATIONS OF THE PELVIC EXTREMITY OF THE FETAL ELLIPSE.

What may be regarded as the second class of presentations of the fetus in utero? That in which the pelvic pole of the fetal ellipse offers to the os uteri while the cephalic pole is at or near the fundus of the organ, as shewn in fig. 69.

Fig. 69.



Why are they unfavorable for the mother? Because of the usual delay in the first and second stages of the labor, and the consequently greater amount of physical exertion which is necessary for her to complete it.

Are pelvic presentations to be regarded as danger-

ous for the child? They are to be so regarded, because of the liability of the head to be arrested in the pelvis of the mother, after the body is extruded.

Why are they more dangerous for the child? Because during the second stage, the child is far more liable to be fatally compressed, both as regards the cord, and the delay of respiration while the head is within, and the body without the uterus.

DIAGNOSIS OF PELVIC PRESENTATIONS.

How are you to diagnosticate breech presentations? The os uteri and bag of waters are not quite so large as in the cephalic presentations; the finger can usually detect a sulcus between the limbs; sometimes, also, the genital organs can be felt, but a still more conclusive evidence presents, when in passing up the finger, you can feel the crista of an ilium and the fold in the groin.

Does the presence or the absence of the meconium afford any value in the diagnosis? Usually it does not, because it is not always present in pelvic presentations; whereas it is sometimes found deposited within the inferior portion of the ovum in some cases of cephalic presentation.

What is the first change which the uterus effects upon the form of the child in cases of breech presentations? Still greater flexion into the form of an ellipse.

DIFFERENT POSITIONS OF PELVIC PRESENTATIONS.

What are the different varieties or positions of the pelvic presentations? For all practical purposes four are sufficient, but some teachers make six, taking the sacrum for the occiput, and the posterior part of the thighs for the anterior fontanelle into comparison.

What then is the first position of the breech presentations? The sacrum to the left acetabulum, and the posterior part of the thighs to the right sacro-iliac symphysis.

What the second? The sacrum to the right acetabulum, and the posterior part of the thighs to the left sacro-iliac symphysis.

What the third? The sacrum to the symphysis, and the posterior part of the thighs to the sacrum of the mother.

What the fourth? The sacrum to the right sacro-iliac symphysis, and the posterior part of the thighs to the left acetabulum.

What the fifth? The sacrum to the left sacro-iliac symphysis, and the posterior part of the thighs to the right acetabulum.

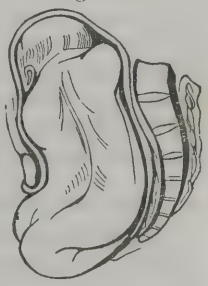
What the sixth? The sacrum to the sacrum, and the posterior part of the thighs to the pubes of the mother.

MECHANISM OF THE LABOR IN PELVIC PRESENTATIONS.

What is the mechanism of labor in the first position of breech presentation? The uterine contractions compress the ovum, complete the fetal ellipse, force down the bag of water, and after rupturing them, they, with the aid of the accessory powers, cause the child to descend through the pelvis in the direction of Carus' curve.

How does rotation take place in this case? The left hip is carried along the right anterior inclined plane, and the right along the left posterior to the median line of the sacrum and coccyx.

Fig. 70.



In what direction does flexion take place after the hips are delivered? Laterally, to accommodate the body to the axis of the pelvis. Fig. 70.

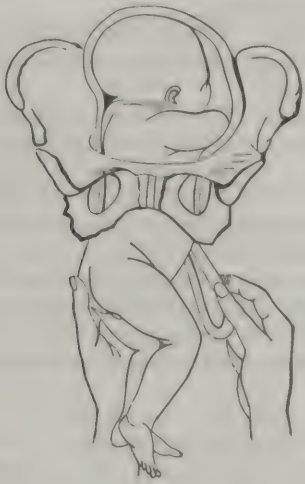
Does restitution of the hips take place? In many cases this does occur to some extent.

Which hip comes under the symphysis pubes in the first position? The left hip.

WHAT TO DO WITH THE CORD.

When the body is delivered as far as the umbilicus, what attention should you give to the cord? Draw out a fold of it to prevent it from being put too forcibly upon a stretch.

Fig. 71.



Suppose you find it compressed, how should you manage it? Endeavor to raise up the part which compresses it, then carry the cord to a part of the pelvis in which there will be more space.

HOW TO MANAGE THE BODY WHEN EXTRUDED.

In what direction should the body of the child be carried, to favor the ready engagement of the head in the inferior strait? In all the anterior varieties of pelvic presentation, the body should be properly wrapped in a napkin, and carried towards the front of the abdomen of the mother. In the posterior va-

rieties, the body is in the same manner to be carried towards the sacrum of the mother.

Do the shoulders rotate in the uterus at the same time that the hips rotate in the pelvis? They are believed to remain fixed in the uterus until forced down into the pelvis, after which they obey the law which compels them to rotate on the inclined planes.

How are the shoulders delivered? One of them passes on the anterior inclined plane, to appear under the arch of the pubes, while the other passes along the posterior inclined plane, to appear in front of the coccyx.

Which arm or shoulder is usually delivered first? That which passes over the sacrum; though this rule is not invariable.

What effect has the rotation of the shoulders upon the neck of the child? It twists the neck of the child one-eighth of a circle.

Does restitution of the shoulders take place after they are delivered? It does, unless some resistance be applied to the body.

Is it important that the head should present in a particular direction, for its safe delivery? It is highly important that the head present its mento-occipital diameter, to the axis of the pelvis.

What hazard may result if the practitioner draw forcibly on the body of the child, as soon as it is delivered? The direction of the head may be so altered that the mento-occipital diameter, instead of corresponding with the axis of the pelvis, becomes thrown across, to correspond with one of its diameters, and thus its delivery would be impracticable.

In what direction would the unaided efforts of the uterus and abdominal muscles, force down the head after the body is expelled? Generally with its mento-frontal, or mento-occipital diameter to the axis of the pelvis.

Is there any difference in the mechanism of the second position of the breech? There is no essential

difference except that the rotation takes place in an order reversed from that in the first position; that is, the right hip and shoulder rotate on the left anterior, and the left hip and shoulder on the right posterior inclined plane, and the occiput on the right anterior inclined plane.

What is the usual mechanism of the labor in the third position of the breech? Although the breech may engage with the sacrum to the pubis at the superior strait, the hips and shoulders are mostly twisted upon the inclined planes, and thus come down obliquely, and finally present one to the coccyx, and the other to the pubes at the inferior strait.

Is the head in any greater danger of being arrested at the superior strait in the third, than in either the first or second positions? The mento-occipital diameter may become wedged in the antero-posterior diameter of the superior strait, and thus require manual or instrumental assistance to disengage it.

What is the mechanism of the fourth position of the breech? Here the sacrum is to the right sacro-iliac symphysis, the right hip toward the right acetabulum, and the left one toward the left sacro-iliac symphysis; as the child descends, the left hip is carried down the left posterior inclined plane, and the right hip down the right anterior inclined plane to the arch of the pubes; the shoulders follow the same route, the occiput is driven down along the right posterior inclined plane to the middle line of the sacrum and coccyx, to escape at the posterior commissure of the vulva.

What is the principal difficulty in this case, and that of the fifth and sixth positions? The liability of the head to become arrested at the superior strait in consequence of the chin being carried up by the forced curvature of the thorax.

SUBDIVISIONS OF PELVIC PRESENTATIONS.

How are pelvic presentations divided? Into regu

lar and irregular presentations—or into breech, feet, and knee presentations.

Which of these are regarded as irregular and unfavorable? Those of the feet and the knees.

Is there any essential difference in the cases of presentation of the feet and breech? There is nothing essential in the mechanism of the labor, except that as the first stage is shorter, the second is usually more protracted.

Is the child subjected to any greater risk of its life in this than in breech presentations? It is so, in consequence of the degree of compression of the body, thorax, and neck, which are compressed by the soft parts of the mother.

Why are the shoulders likely to be delivered with greater difficulty in this than in breech cases? Because as the feet or knees make their exit through the os uteri before it is much dilated, and then meet with little resistance to their descent in the pelvis, the os uteri is liable to embrace the arms and shoulders, and thus prevent their ready descent.

How are knee presentations calculated?

The anterior part of the legs compare with the occiput or the nape of the neck, and the anterior part of the thighs with the anterior fontanelle in cephalic presentations.

What is the best direction to be given to the patient during the first stage of labor in reference to her bearing down? As it is desirable to prolong the first stage of labor in all the pelvic presentations, especially in these cases, she should be urged not to bear or force down.

Suppose you find her strongly disposed to do so, what precautions should you take not to allow the membranes to be ruptured too early? Oblige her to lie down; if she have intestinal or vesical irritation, calm them by anodyne enemata; if she cough, tranquillize it by some suitable anodyne.

When you diagnosticate any of the pelvic presen-

tations, should you make any effort to deliver the child while it is yet in the uterus? Never, unless some accident should complicate the labor, as convulsions, hemorrhage, &c., and then, not unless the os uteri be sufficiently dilated.

When the hip descends should you be careful to ascertain whether it rotates? Although rotation of the hip is of less importance than that of the occiput, yet it is proper that you should secure the rotation of the hip as it passes through the pelvis.

Should you use any traction effort on the child at this time? None whatever; it would be generally safer for you to retard the descent of the child, that the os uteri may become freely dilated.

Should you support the perinæum at this period? You should; not so much however to prevent its being lacerated as by this means to delay the descent of the child.

Should you do any thing more than to support the child, and the perinæum at this time? Nothing more than this; no traction should be made on any part of the child, unless it be to assist rotation.

What duty devolves upon the practitioner in conducting a labor in which the feet or knees present? Those which are similar to what is required in the management of breech presentations, taking care in every variety of such presentations not to interfere with any portion of the child which is in utero, unless there be some mechanical embarrassment to its delivery.

What is an important rule, in reference to feet cases? Not to facilitate the descent of the feet until the first stage is completed.

Suppose the heels of the child are situated in contact with the breech, should you pull down the feet? No; you should retard the delivery in the first stage, keeping up the feet, to allow the breech, &c., to descend and dilate all the soft parts.

MEDICINE AND SURGERY OF THE LYING-IN-CHAMBER.

Of what principles of the healing art, is the practitioner of midwifery to avail himself, in the management of difficult labors? Both medical and surgical principles, viz.: those which are strictly medical, by which he is to overcome difficulties by the use of agents generally administered internally; and those which are strictly surgical, *i. e.* manual or instrumental; in which the obstacle is overcome, or aid rendered by the hand alone, or by the hand and appropriate instruments.

What circumstances may complicate labor, and render medical or surgical aid, or both, necessary? Rigidity of the os uteri, or of the external organs, or of both; hemorrhage from some part of the body, particularly from the uterus; convulsive movements of the nervous and muscular systems; inertia of the uterus, &c.; mal-positions of the fetus; deformities of the pelvis; the existence of tumors within it, &c.

What has the accoucheur to do in these cases? To temporize and use medical means in the cases of rigidity, but he must use the hands or instruments, or both, in the other varieties of complications.

What is the character of the medical means to be used? Such as overcome rigidity when it exists, and such as stimulate the uterus when necessary.

What is the character of the surgical means to be used? That which modifies the position, or presentation of the child, or expedites the delivery of it and the placenta, when necessary, and that which prevents or corrects accidents to the woman and child.

What are the operations by the hand called? Manœuvres or manipulations.

What complications of labor require the use of the hand to aid in its termination? Those in which there are deviations of position: and those in which hemorrhage, or convulsions occur.

What function does the hand usually perform? The correction of the presentation or position; version, &c.

HOW TO ASSIST FLEXION.

Under what circumstances may you facilitate the progress of the head through the pelvis? Provided flexion is not complete, you may apply the finger against the side of the forehead, (not on the fontanelle,) and pushing it up, facilitate the flexion.

Which finger should be used? The index of the left hand, for the first and fifth positions, and that of the right hand for the second and fourth positions, especially if the patient be on her back.

Is this the only manner in which you can accomplish this flexion? In some cases it may be even better to apply one or two fingers to the occiput with a view to bring it down.

Would you then employ the same fingers? It would then be more convenient and effective to use those of the right hand in the first and fifth, and those of the left hand in the second and fourth positions, while the patient remains on her left side.

VECTIS OR LEVER.

Could any instrumental means be brought to aid or substitute the hand for assisting flexion, and rotation? The vectis or lever has for many years been employed to aid, or substitute the hand in changing deviated positions of the head.

What kind of instrument is the obstetric lever, or vectis? It is intended mainly as a substitute for the better action of a single hand, whenever that hand cannot be well applied to the parts upon which the change is to be effected.

What is the usual form of the vectis? Although since the days of Roonhuysen, the supposed inventor, in the early part of the eighteenth century, the vectis has undergone many modifications in form, and pro-

bably also in the mode of use, that commonly preferred at present is represented in

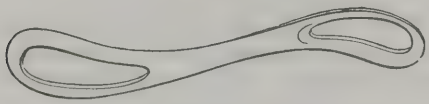
Fig. 72.



The whole instrument is twelve inches long; the handle four and a half, the rounded part of the shank is two and a half inches, while the expanded and concavo-convex clam occupies the remaining five inches.

There are still to be found in the hands of some practitioners the vectis with a clam at each end, one of these clams is usually smaller than the other, for introduction, in some cases, in which the pelvis is contracted, or for the purpose of disengaging a pessary from the vagina. This form is shown in

Fig. 73.



The original from which the drawing was made measures ten inches.

MANNER OF USING THE VECTIS OR LEVER.

What is the correct method of using the vectis or lever? The first principle to be borne in mind is that the concave surface of the instrument is to be adapted to the convex surface of the child's head.

What is probably the simplest rule for the hand in which it is to be held, for introducing it to its proper place on the head of the child? It will be most expedient to hold it in that hand which according to the

rule for making version or rotation of the head, is not employed in the vagina, that is, since in the first and fifth positions of the occiput, when the woman is on her back, it is expedient to pass the left hand into the vagina for rectifying deviation, causing rotation, or assisting flexion, so it will be proper in these cases to hold the vectis in the right hand, while the left is used as a guide for it to its place, and the opposite hand will be found best to be used in the second and fourth positions.

HOW TO EFFECT ROTATION OR CONVERT ONE POSITION INTO ANOTHER.

How should you assist rotation, if the fetus require ti? If, in the first position, by passing the index finger of the right hand over the left parietal protuberance, and press from behind forward; or what may be better, introduce the index finger of the left hand, to the right temple of the child, and press it from above downwards. If in the second position, the left finger is to be used on the right parietal, or the right on the left temporal bone. If in the fourth position, with a view to facilitate rotation into the hollow of the sacrum, the left index finger is to be applied to the left parietal bone, or the right to the right temporal bone. If in the fifth position, to rotate to the sacrum, the right index to the right parietal bone, or the left index to the left temporal bone.

Suppose you are not certain of your diagnosis at this stage of the labor? Do nothing until you are certain both of the diagnosis, and indications.

Should you attempt to convert a third, into a first or second position of the vertex? Yes; whenever possible.

Suppose flexion does not take place, how could you assist it? By passing one or more fingers up under the arch of the pubes and applying it over the occiput and drawing it down, or by passing up two fingers,

one on each side of the frontal bones, and pressing them backwards and upwards.

When you find some difficulty in converting the third into the first or second, how should you proceed? Pass in the hand, and carry up the whole head during the absence of pain and then convert it.

In reference to the first or second position, how far back may the occiput be, to justify our considering it still a first or second position? Very far back when still high in the pelvis.

Are transverse, or occipito-iliac positions rare? They so rarely occur, as not to have a place in most systems of midwifery.

Does the occiput or the vertex enter the superior strait readily in the posterior varieties? It usually enters the superior strait, more readily than when it is anterior.

What is the usual difficulty in the case in the course of the labor? That of getting the flexion to take place, to a sufficient degree.

How should you assist the flexion? By pressing against the forehead, or by passing a finger into the rectum, and drawing the occiput forward if it cannot be reached through the vagina.

Why is the perinæum in greater danger in this than in other cases? The occiput is applied to it with more force because of the increased size of the circumference of the head.

What do some scientific and experienced accoucheurs think a good rule in all cases of occipito-posterior position, if diagnosticated early? Always to direct the occiput toward the anterior part of the pelvis, which must pass through it in such cases.

How would you convert a fourth into a second position? By pressing against the pubal side of the face with a finger of the right hand, or upon the sacral side of the occipital and parietal bone with the fingers of the left hand.

How would you convert a fifth into a first position?

By pressing against the face, temple, or cheek; or against the sacral side of the occiput with the finger of the left hand in the first, and of the right hand, in the second instance.

What theoretical objection might be suggested against this practice of artificial conversions? That the oblique position of the child originally, may make it necessary that the neck be twisted more than one-third of a circle.

What is the result of experience on the subject? That no injury does arise from the practice.

What conversions should you make of the sixth position? Into a fourth or fifth position; this conversion is sometimes spontaneous.

What should you do with the occipito-left, and occipito-right iliac, or left and right transverse positions? Always strive to favor the conversion of the first into an occipito-left, and the second into an occipito-right acetabular position.

VERSION BY THE HEAD.

What do you mean by version by the head? That movement by which the head is restored from a deviated to a proper position.

What is meant by version by the vertex? That movement by which a deviation of a vertex presentation is corrected, or reconverted to a true and favorable vertex presentation. This term applies especially to the correction of deviated positions of the head simply, while version by the head, usually means the bringing of the head to the axis of the pelvis when some other part of the child has been presenting.

What is the rule in reference to the hand which must be used? That which corresponds in name to the name of the side to which the occiput presents.

DIFFERENT STEPS OF THE PROCESS.

What are the different steps of the operation? First, lubrication of the hand and soft parts; next,

the dilatation of the genital fissure and vagina; then the passage of the hand into the os uteri; next the seizing of the head; and lastly, its version.

How are you to dilate the vulva? By the gradual introduction of the hand in a conical shape, with the point of the thumb bedded between the fingers.

What position should the hand be in? In a state of semi—supination.

What is this movement technically called? Introduction.

In what condition of the patient are you to make this introduction? During a pain.

In what position are you to carry the hand when introduced? In that of supination.

What general direction are the thumb and fingers to assume? Thumb towards the face, fingers towards the occiput.

In what condition of the patient are you to make the rest of the manœuvre? In the absence of a pain.

How do you seize the head? First, place your hand against the presenting part, push it up in the axis of the superior strait, and slide your hand under it to beyond the middle line of the occiput—then embrace the head, extend the thumb on the sinciput, and carry the chin over to the iliac fossa, opposite to that in which the occiput is situated; then let it descend.

How should the other hand be employed at this time? It should be applied over the fundus of the uterus, to support it properly.

What are the objections to this version by the head? The difficulty of seizing the head.

PRESENTATIONS OF THE ANTERIOR FONTANELLE.

Do cases of presentations of the anterior fontanelle, to the centre of the pelvis, ever occur in practice? They are sometimes met with.

How does this happen? In consequence of the head being carried down in a state of extension instead of flexion.

What diameters present to the pelvis in this case? The occipito-frontal, and bi-parietal diameters.

What diameter corresponds with the axis of the superior strait? The trachelo-bregmatic diameter.

Does this deviation ever become spontaneously corrected as it descends? It is believed that it might be hazardous to rely upon spontaneous correction of this deviation, though this may possibly occur.

Suppose, however, the occiput becomes arrested at the linea-ilio pectinea, what is the consequence? The head becomes locked in the superior strait, cavity, or inferior strait of pelvis.

Would such a state of things render delivery impracticable? It would, unless the pelvis be very large, or the head very small.

What practice should you adopt to prevent the occurrence of this difficulty, if you see the patient early? If the os uteri be sufficiently dilated, to enable you to carry up one or two fingers sufficiently far, you may push up the forehead and let the occiput descend.

Does the head, when so deviated, engage less readily in the superior strait, than those in which the vertex presents? There are two causes of delay in the descent of the head in deviations of this kind; first, because this position of the head offers a larger surface to the os uteri, and therefore cannot pass through it so readily; secondly, the occipito-frontal diameter cannot readily descend in the superior strait, while the thickness of the walls of the neck of the uterus is added to it.

When are these deviations mostly recognized? When the head has come down into the cavity or inferior strait of the pelvis.

What indications have we to fulfill when the head has descended into the inferior strait in either of these positions? The movements of flexion, and if necessary, rotation.

How are you to make the restitution in this case?

Pass up your finger, and arrest the descent of the head until the occiput comes down, or act on the side of the forehead with the fingers of the appropriate hand.

If the fingers do not succeed, what would be the next best step of procedure? If there be room, pass up the entire hand into the pelvis, and then seize the head to carry its chin up to the thorax, and let the occiput descend.

Is it indifferent which hand is used in these cases? By no means, since to provide against embarrassment in this operation as much as possible, it will be found best always to use the hand of which the palm would always readily look toward the face of the child—thus if the woman were lying on her back, and the deviation was from the first, or occipito-left acetabular position, the left hand should be used—also in similar deviations from the fifth position—while in deviations from the second and fourth positions, the right hand should be used.

What is the manner of direction of either hand to be used? First, compress the fingers into a conical form, then during a pain pass it entirely within the vulva till the points of the fingers touch the child's head; next, as soon as the contraction subsides, pass the fingers around the sacral side of the head, fairly upon the occiput, spreading the thumb at the same time upon the sinciput, as far as possible towards the forehead, carry the head so embraced, a little way, if possible, clear of the superior strait, and at the next moment, by an adducting motion of the hand upon the wrist carry up the mental and depress the occipital pole of the head—retain it in this position till a contraction forces down the head with the occiput fairly on one of the inclined planes.

What should the introduced hand perform at the same time, if the occiput be posterior? So rotate it as to cause it to engage on one of the anterior inclined planes.

How should the other hand be employed at the same time? In giving proper support to the uterus by being expanded on the abdomen over the fundus of the uterus, and assisting to correct a right or left lateral obliquity if any exists.

TRY TO USE THE LEVER.

Suppose you cannot succeed with your fingers or hand, what should you do? Try to fix the lever upon the occiput, and pressing up the forehead with the finger, bring down the occiput.

Should you do this in the absence of a pain? This is the only time in which you could expect to succeed.

If the head descend into the cavity, how should you manage it? Pass in your lever under the sacral side of the occiput, and effect flexion and rotation at the same time.

Suppose the head has descended into the inferior strait, how should you do? It is desirable still to make restitution if possible, and bring the occipito-mental diameter into relation with the axis of the pelvis, and with this view it has been proposed to pass one or two fingers into the anus, and press the head through the recto-vaginal wall, into its proper relation with the pelvis, and then let it come down.

OBLIQUITY OF THE UTERUS—PROBABLE CAUSE OF DEVIATION.

Do the obliquities of the uterus probably ever contribute to cause these deviations? It is believed that they do.

Is the head in these deviations more likely to be arrested in the third, than in other anterior varieties? This opinion is entertained by some accoucheurs.

What practice should be resorted to, to correct the deviation in these cases? Push up the head, rotate it partially, push up the forehead and allow the occiput to descend.

Can you use the lever to any advantage? Yes, if properly applied, you may effect both flexion and rotation with it and the fingers.

Is this a proper case for the forceps? No, not while the deviation continues.

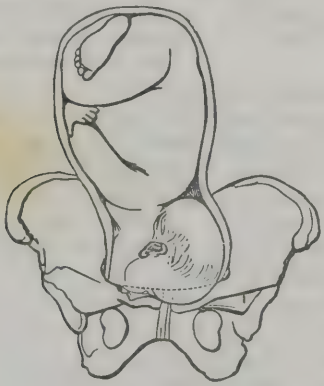
When the deviation takes place to a still greater extent, what kind of presentation have we? Presentation of the face.

PRESENTATION OF THE FACE.

What diameters present to the pelvis in face presentations? The fronto-mental and bi-malar, apparently —though really, the trachelo-bregmatic and bi-parietal diameters, when the chin presents or rotates anteriorly.

What part presents to the centre of the pelvis? The root of the nose.

Fig. 74.



Does much embarrassment occur in all cases of face presentation? It does so when the sinciput is anterior in consequence of the occiput being thrown backwards upon the spine of the child.

Is delivery impracticable in that case? It is nearly always so, if the child has its usual proportions.

Suppose the chin presents to the anterior parts of the pelvis, is delivery equally impracticable? Spontaneous delivery is practicable, and the child may be readily born alive.

Fig. 75.



What is the reason of this, since in all other cases of dorsum of the child to the spine of the mother is regarded less favorable than when the dorsum is anterior? In this case it is true, there are many inconveniencies; but as the chin descends nearly in the axis of the pelvis, the sinciput is accommodated in the hollow of the sacrum, the trachelo-bregmatic diameter nearly corresponds to the occipito bregmatic diameter as in cases of original occipital presentation; as the head descends, the chin appears under the arch, while the front part of the neck is forced strongly against the posterior part of the pubes, and this part of the throat becomes as it were, the centre of motion as the head is driven forward; to have first the chin, next the face, then the forehead, and lastly the sinciput, pass successively over the perinæum. In consequence of the small depth of the pelvis at the symphysis, the back part of the head and the top of the thorax, are less forcibly engaged in the superior strait at the same time in this case, as must happen in the case of those positions in which the bregma comes under the arch of the pubes, (fig. 77.)

Are the face presentations to be regarded as rendering delivery impracticable? Not when the chin rotates under the arch of the pubes.

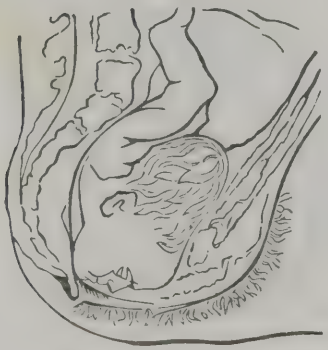
Can the face enter the superior strait when the chin presents to the sacrum of the mother? It can enter the superior strait without much, if any difficulty.

Fig. 76.



What obstacle offers to the delivery of these cases? When the chin is turned towards the sacrum, it may be said that we have the occipito-bregmatic diameter of the head, and the dorso-sternal diameter of the upper part of the thorax, attempting to pass down into the space of the sacro-pubal diameter of the pelvis. Under such circumstances, it is impossible for the occipito-mental diameter of the head to come into correspondence with the axis of the pelvis; the convexity of the sinciput is constantly applied to that

Fig. 77.



of the inner side of the symphysis pubes, while the concavity of the mental, tracheal and thoracic surface;

so to speak, is opposed to the cavity of the posterior portion of the sacrum. Hence the capacity of the pelvis is insufficient for the transmission of the head and shoulders of the fetus in this direction, by the uterine and voluntary powers of the mother alone, and scarcely ever by the use of the forceps.

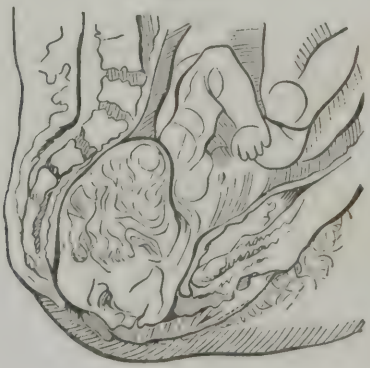
CLASSIFICATION OF FACE PRESENTATIONS.

How many varieties or positions of face presentations are recognized by systematic writers? Usually the same number as in occipital presentations.

What are the most common varieties of face presentations? Presentations of the face are nearly always resolved into right mento-iliac and left mento-iliac, by the time the face gets into the cavity of the pelvis.

Can the labor in these cases be terminated spontaneously, or with slight assistance? They can provided the chin comes under the arch of the pubes.

Fig. 78.



What is the mechanism of labor in these cases? First, the extension becomes as great as possible—the face is then carried down, the chin rotates upon

the anterior plane, until it gets under the arch of the pubes: flexion then takes place until the head clears the perinæum, and the labor terminates as in an occipito-posterior position.

Does flexion take place at any time during labor with face presentation, chin forwards? Not at all, until the chin comes under the arch of the pubes.

Should you in all cases endeavor to assist the rotation of the chin under the arch? Always, if possible.

What should you do if you find the child descending face foremost at the superior strait? By the old rule, we should make version by the feet, but under the counsel of more scientific instruction, we should perform version by the head, and bring down the vertex, if the chin cannot be made to descend on an anterior inclined plane to the symphysis pubes.

Suppose a manipulation of this kind to be admissible, that is, the head still high up and easily moveable above the superior strait, in what direction should you attempt to bring down the occiput? Always at first into that opposite to that in which the chin was situated, after which you must effect rotation if necessary, as already stated.

Suppose the second stage of labor be complete, and the face have descended into the cavity of the pelvis, how should you act? Endeavor to rotate the chin towards the arch of the pubes.

Can much be done by the use of your fingers, if you well understand the mechanism of labor? Much may be done by these means at various degrees of the progress of labor, if its mechanism be well understood, and the accoucheur use his fingers dexterously and cautiously.

Suppose you find the top of the head coming under the arch of the pubes, and you cannot rotate it, what instruments *may* you apply? The forceps, with the hope of effecting delivery ultimately.

Does the introduction of these instruments require

any *particular care* in these cases? Great care is necessary, as you are obliged to depress the handles, and at the same time apply the ends of the blades high above the pubes, and more or less against the shoulders of the child.

What instruments are indicated in cases the forceps cannot deliver? Perforator and crotchet, &c., or after the perforator and the collapse of the cranium, the cranotomy forceps of Dr. Meigs.

CASES PROPER TO BE CONVERTED INTO FACE PRESENTATION.

What deviations may we convert with advantage into face presentations? Those in which the forehead presents, and cannot be rectified by restoration to an occipital or vertex presentation.

What objections to this practice when the occiput is anterior? They would then be converted into a case of impracticable labor with the face presentation, unless rotation could be effected by dexterous manipulation.

Should you ever allow a forehead presentation to continue as such when you discover it to exist? Never, if possible to correct it by reduction to an occipital presentation, or an antero-mental presentation.

What should be your rule of action in these cases? To convert the fronto-anterior position into the chin presentation, and to attempt to bring down the occiput, when they are sincipito-anterior.

VERSION BY THE FEET.

What is meant by version by the feet? That operation by which the hand is introduced into the uterus, and the feet seized and brought down by it.

Which variety of version is most common in this country? Perhaps version by the feet.

Which is to be preferred, when either version by the head, or by the feet, is accomplishable? That by

the head by far, as the subsequent delivery is more natural and safe.

What inconveniences does the mother usually suffer from an effort by the accoucheur to make version by the feet? Pain, risk of hemorrhage and the rupture of the uterus, or other injury to it.

To what risks is the child subject, in version by the feet? It may suffer from being too severely twisted upon its spine; and also, all the inconvenience of original feet or breech presentations.

Is version by the head or feet, to be resorted to with a great deal of care? It must so, and with calculation of the capability of the mother to bear it.

Should you obtain a consultation on the propriety of it, if possible? You should, whenever it is practicable without hazardous delay.

CONDITION OF THE MOTHER FAVORABLE TO VERSION.

What condition of the os uteri must exist before it will be admissible to perform version? That of dilation, or facility of dilation.

What are you to do until this state of the os uteri is obtained? Temporize by using proper medical treatment if any be indicated.

ONLY WHILE THE HEAD IS WITHIN THE OS UTERI.

Is it admissible to make version after the head has passed the os uteri? Never; you should operate as soon as possible after the first stage is completed.

What dangers attend any attempt at this operation under such circumstances, that is, when the head has been driven out of the uterus? The uterus may be ruptured, and the soft parts within the pelvis may be injured; the child's head may also be wounded.

OPERATION.

At what moment can you proceed to this operation with the best effect? Directly that the first

stage of labor is complete, or the os uteri sufficiently dilated to admit the passage of the hand and arm.

POSITION OF PATIENT PROPER FOR IT.

What position should the patient be placed in for the purpose of making version by the feet? On her back, with her hips over the edge of the bed, and her feet properly supported.

Why would you have her brought to the edge of the bed? To allow room for the ready movements of the accoucheur in introducing his hand and part of his arm and completing the manœuvre.

How should the patient's feet be disposed of? They should be placed out on chairs or any convenient staging which may enable her to keep them on a level with her hips.

POSITION OF THE ACCOUCHEUR.

What position is the accoucheur to assume for the purpose of passing the hand? One in front of the patient and which is most easy to himself.

What attention should be given to the dress of his person, to prepare for this purpose? He should lay off his tight coat, roll up his shirt-sleeves, then put on a wrapper, or some other loose cover, with as little display as possible.

How are the parts of the patient to be prepared? They should be well lubricated with some mucilage, oil, or lard.

What calculation has the operator to make previously to passing the hand? That by which he determines what is the position of the different parts of the child, what alteration he has to make, and which hand he must use to effect this object.

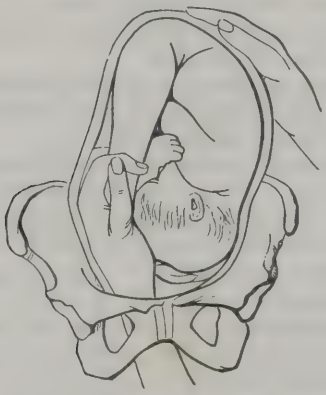
RULE FOR THE USE OF THE PARTICULAR HAND.

What is the rule for the use of the particular hand in version of the feet? Use that hand, the palm of

which would correspond to the abdomen of the child, and which in withdrawing it, having hold of the feet, will keep the body in a state of flexion during the whole process of the version, or till the limbs and body are withdrawn from the uterus.

How are you to proceed to make the version by the feet? First, introduce the hand properly during a pain; next, press up the head, and pass the palm of the hand along the front and on one side of the child, over the whole body to the breech, then cause it to descend upon the thighs and legs, and next embrace the feet, retain these in the hollow of the hand until they are brought down into one iliac fossa, or into the cavity of the pelvis; then slip the index finger between them, retaining the heels in the palm of the hand, until they are completely beyond the vulva. Fig. 79.

Fig. 79.

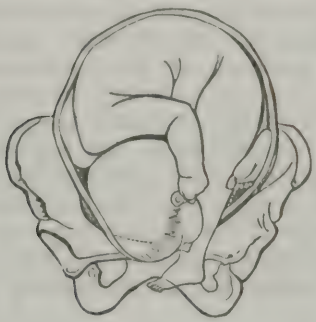


Can you always seize both feet in this case? Though a skilful operator can mostly do so, it is not always practicable.

How must you act if you have but one foot? Draw

it carefully downward, in the direction of the axis of the pelvis, at the same time adducting it towards the other as much as possible.

Fig. 80.



How can you secure the foot drawn out, while you search for the other? Pass a noose of a soft band or fillet upon it, and let the loose extremities of the fillet remain out of the vulva.

Is it always necessary to reach the second foot? It is neither always necessary nor proper to search for this, if it is not easily found.

What rule should be observed in reference to bringing the back part of the feet to the anterior part of the pelvis? Always to do this, because of the much greater facility of subsequent delivery of the head.

How is this to be effected? By acting upon the pubal leg more than on the other.

Into what position of the feet do you change a first cephalic position? To the second, and not to the fourth position of the feet.

How are you to do this? By acting most on the pubal leg, and abducting it from the other.

Into which position should you bring the feet, when you use your right hand for version? First position.

In which position does the left hand bring down the feet? Into the second position of the feet, as seen in fig. 81.

Fig. 81.



WHEN TO ACT ON THE BREECH ONLY.

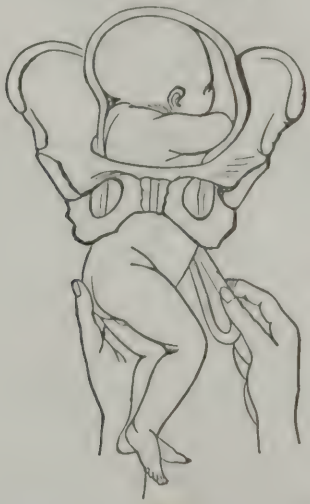
Suppose you were to find when you had decided that version of the child was necessary, that the ovisac had been ruptured, the waters drained off, and the uterus was pressing on the fetus, by powerful tonic contractions, would you deem it expedient to overcome this resistance by a forcible attempt to unfold the feet, at the risk of increasing the transverse diameter of the excited organ, at least three inches? The propriety of such a proceeding would be at least doubtful, and it would probably be more appropriate

to attempt the version by causing the hand employed within to act upon the breech only, while the hand without should by a well-directed movement aid in causing the pelvic pole of the fetus to descend towards the pelvis of the mother.

WHAT TO DO WITH THE CORD.

What should you do when you have delivered the body as far as the umbilicus? Draw out a fold of the cord of sufficient length, to prevent it from being ruptured, as shown in

Fig. 82.



Is it necessary for you to continue to aid the delivery of the child, after you have made version or mutation? It is usually necessary, at least to such an extent as enables you to assist the proper rotation of the hips, shoulders, and head.

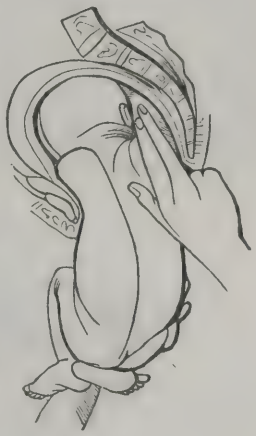
If you find the arms do not descend with the body

of the child, can you do any thing to encourage their descent? Suspend the tractive effort, resist for a few moments, the descent of the body, and let the uterus force down the arms if possible.

Suppose however this does not occur, how are you to act to get down the arms? Carry the body sidewise, so as to admit of the introduction of the fingers up to the elbow, and bring down first the sacral, and next the pubal arm, in the proper direction for flexion at the elbow.

Is there any rule as to the hand, which should be used in bringing down the shoulders? It will be found more convenient, and is certainly more appropriate to use the right hand for bringing down the right shoulder, and vice versa.

Fig. 83.



In what way can you best adapt the hand to cause it to occupy the least possible space, while performing this part of the operation? Spread the palm upon the scapular and the axillary space of the thorax, so that the thumb will be directed towards the vertebral column, while one or two fingers are spread upon the humerus, to be flexed as soon as their points reach the middle joint of the arm.

Which way are you to direct the movements of the arm? Always over the anterior portions of the child's head, thorax, and abdomen.

Suppose the arms are locked behind the occiput of the child, how would you disengage them? Press up the head during the absence of a pain, and with the

points of your finger, carry the elbow over the side of the head and face, and then over the thorax. If you cannot succeed with your fingers, use the blunt hook, as a lever for this purpose.

If the trunk and arms be thus delivered, and the head is found to be arrested in the pelvis, what steps should be taken to secure its speedy delivery? Reposing the body of the child on an arm, quickly but dexterously, insert one or more fingers, over the chin of the child to its mouth, upon this draw till the head is disengaged, or till the chin descends as far as possible upon the neck or thorax; if this does not succeed in a very short time, pass two fingers upon the zygomatic processes of the malar bones, and draw down forcibly, while with one or more fingers of the other hand push up the occiput with a view to get the mento-occipital diameter of the head to correspond as nearly as possible with the axis of the pelvis, as seen in fig. 84.

Fig. 84.



What other benefit might accrue to the child if the fingers of the accoucheur were skilfully applied upon its face in case the delivery of the head could not be

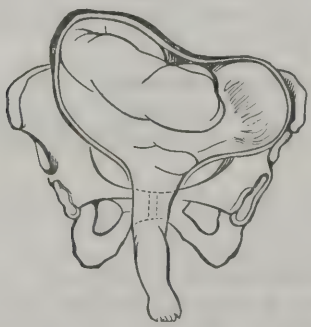
instantaneously effected? By such attentions the child is often enabled to respire freely, and its condition rendered safe, though it, the mother, and the attendants are still compelled to be in a very uncomfortable situation.

What instrumental aid would be indicated in case of failure of success in attempts to deliver the head by the hands alone? The vectis or lever, might possibly be of service to assist in getting the head into proper relations with the maternal pelvis, but the forceps, and possibly the perforator also, should be most relied upon if the extraction could not afterwards be effected by the manual exertions.

SHOULDER PRESENTATIONS.

What do we mean by shoulder presentations? They are presentations of the upper parts of the sides of the body, and are probably originally deviations from cephalic presentations.

Fig. 85.



CLASSIFICATION OF SHOULDER PRESENTATIONS.

What number of presentations of the shoulders are there? Two of the right and left shoulders, each.

What points of the mother and child, do we take in

our diagnosis? The pubis and the sacrum of the mother, and the dorsum of the child.

How do you diagnosticate the shoulder presentations? By the presence of a tumor, on one side of which is a smooth elastic surface, the side of the neck; on another a slender bone, the clavicle; on the opposite side a broad plate of bone, the scapula; between these a number of small ridges, the ribs; mostly, and more important, a small cylindrical body, an arm, lying parallel to a larger one.

What is the value of the hand of the fetus in the diagnosis of shoulder presentations? It may assist considerably in making up the diagnosis. By some practitioners it has been advised to bring down the arm to determine the position. We are persuaded, however, that this practice is rarely if ever necessary.

Should we be very precise in our calculation of the exact relative position of the back and the pelvis? As it probably rarely happens, that the dorsum of the child is applied to the pubes with as much accuracy as the occiput is to the left acetabulum, &c., we have to take, as a general statement, the nearest approximation to it in our practice.

POSITIONS OF THE SHOULDERS.

What are the positions of the shoulders? Dorso-pubic, and dorso-sacral, of the right and of the left shoulders.

Can spontaneous delivery ever take place in cases of shoulder presentations? Never while they continue as shoulder presentations, provided the child be at or near the term of its development. In some very rare instances, the uterine and voluntary contractions have effected such mutations in the position of the child as to expel it with one of the extremities, usually the pelvic, presenting.

SPONTANEOUS VERSION.

What is this mutation called? Spontaneous evolution, or spontaneous version.

What is to be understood by spontaneous version? That movement by which the body of the child, originally unfavourably situated, becomes changed in such a manner as to present one of the extremities (especially the pelvic) of the ellipse, that it can enter and pass through the pelvis, aided by the powers of the mother alone.

How do you explain the law by which this change is effected? As already mentioned, it depends probably upon the flexibility of the fetus, and upon the direction of the uterine forces aided by the contractions of the abdominal muscles.

Fig. 86.



What is the probable proportion of cases of spontaneous version, in shoulder presentations? It has been rated at one case of spontaneous version, to one thousand cases of shoulder presentations.

ALWAYS RECTIFY DEVIATED PRESENTATIONS IF POSSIBLE.

Should you ever wait for spontaneous version, in any cases of shoulder presentations, or of those of the lower or upper part of the body? It would not be proper to wait, if it be possible to act judiciously for correcting the deviation.

Suppose you find the lower part of the body present; what is the rule of practice? To pass in the hand, and bring down the breech or feet.

Suppose some portion of the upper part of the body present, what should you do? Pass in the hand, and make version by the feet.

What should be the condition of the soft parts, before you proceed to an attempt at version? They should be relaxed or dilated, to an extent sufficient to avoid contusion or laceration.

When you have diagnosticated such a deviation, should you endeavor to preserve the membranes till all the parts are dilated? This is proper in all cases of real, or supposed deviation, until the parts are well dilated.

RULE FOR THE USE OF THE HAND.

What is the rule for the use of the particular hand, and its mode of introduction? 1. That rule which applies to version by the knees or feet, in all cases, viz.: the hand, the palm of which, looks towards the abdomen of the child, except in dorso-sacral posi-

Fig. 87.



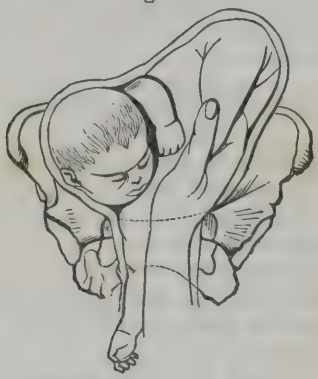
tion of the shoulders. 2. When it is ascertained that the dorsum of the child is towards the pubes of the mother, the hand is to be introduced, which can be

readily flexed into the iliac fossa in which the breech is situated; this will be the right hand for the breech in the right iliac fossa, and the left hand in the left iliac fossa.

In either of these cases, the hand is to be carried up supine beyond the child or between it and the sacrum along one of its sides to the breech, then along the thighs to the knees or feet, which of course are to be brought down, by the left hand in the second, and by the right hand, in the first position of the feet or knees.

Will the same rule apply to the case of dorso-sacral positions? No: here the reverse obtains, that is, in the dorso-sacral position of the right shoulder, in which the breech is in the left iliac fossa, the right hand must be passed up in front of the child and in a semi-prone condition: while in the dorso-sacral position of the left side in which the breech is in the right iliac fossa the left hand must be passed up in a semi-prone condition between the child and the lateral part of the uterus.

Fig. 88.



In passing the hand for the purpose of reaching the hams or feet for version, is it proper to persist in

carrying it up where there is a uterine contraction? All attempts at acting with the hand in the uterus, must be suspended as soon as the contraction takes place, and moreover, the hand must be expanded upon the part of the child with which it is in contact at that time, lest the knuckles should cause rupture of the uterus or other injury.

Is it sometimes necessary to rotate the body of the child on its own axis, in some of the shoulder presentations for the purpose of getting down the feet? This is unavoidable, particularly in dorso-sacral positions of either side.

Suppose the body has been under pressure of the uterus, and the shoulder is wedged down in the pelvis, must you act at once, or endeavor to allay the contractions of the uterus? It is a fundamental rule, never, if possible to avoid it, to act, in attempting at least the first steps of version, unless when the uterus is in a state of relaxation. If therefore the tonic contraction of the uterus upon the child, be such that it is immoveable in the uterus, efforts must be made by bleeding, warm bath, nauseants or opiates, to overcome the constriction which this powerful organ exerts upon its contents.

INSTRUMENTAL DELIVERY IN SHOULDER PRESENTATIONS.

Suppose the child be dead, or you have reason to believe that the mother will die if not speedily delivered, what would you do? Deliver by the crotchet or other appropriate instrument.

How would you proceed to do this? Eviscerate the thorax by perforating it, and removing its contents; then remove portion after portion of the child, as it comes within reach.

Should you always favor the process of version by the feet, even after eviscerating the child, rather than to force the head down first? This is preferred by good authority.

Suppose a hand should descend with the head, what practice should you resort to? Support it at the superior strait while the head descends.

Should you ever make traction effort upon the arm in case of its descending first under any circumstances? Never; such a practice would always complicate the difficulty of subsequent delivery.

FURTHER INQUIRIES ON THE DIAGNOSIS, AND MODE OF ACTION IN CASES OF FALSE PAINS AND THE DEVIATED POSITION OF THE CEPHALIC OR PELVIC POLE OF THE FETUS.

What condition of the os uteri should be found in regular labor? It should usually be found somewhat dilated; and when a finger is applied to it during a pain depending upon uterine contraction, it will be found to be tightened up by being drawn as it were, over the lower segment of the ovum.

Is it always easy to determine whether the patient is in labor or not? To the young practitioner it is often very difficult; even experienced accoucheurs cannot always decide positively.

What are the usual means of discriminating true from false pains by the history of the case? By the character of the pains: true labor pains are mostly alternate, showing a distinct interval of ease between them, while in colic, or neuralgic pains, they are more irregular, and in the pains attendant upon inflammation, they are more constant and accompanied by more febrile action.

Suppose you had reason to conclude that the patient was afflicted with false pains, how should you attempt to relieve them? By recourse to efforts to remove the supposed causes; if they depended upon constipation, by cathartics, or enemata; if upon inflammatory action, by bleeding, &c.; if upon neuralgia or spasms, by proper anodynes, or counter irritants, &c.

Can you always positively assure a woman that she is in labor, if you find her os uteri dilated to the size of a ten cent piece? Though this circumstance, ac-

companied by pains of a more or less regular character, may be considered as sufficient data for diagnosticating the actual existence of labor, yet it has happened to some practitioners to observe this state of things in women who have subsequently gone from one to four weeks after this, before they were delivered.

CHANGES OF POSITION OF FETUS IN THE EARLY PART OF LABOR.

Is any change effected in the position of the child during the early stage of labor? Great changes are sometimes effected in deviated positions, even before the os uteri is well dilated, or the child driven down into the lower pelvis.

How are we to account for such changes? First, in the peculiar form of the abdominal and super-pelvic cavity; and secondly, in the flexibility of the child, its form is adapted to the shape of the uterus, in such manner as to make its long diameter correspond to that of the long diameter of the uterus, whatever this may be.

Some persons have compared the fetus in utero, to a cork inside of a bottle, which can pass through the neck only in a certain direction, is this comparison correct? Not exactly so, as the child is more pliable, yet it must finally escape only in the direction of its long diameter.

When deviations of presentations of the body occur, is it proper for you to wait until spontaneous version takes place? It would not be best: we should always endeavor, if under favorable circumstances, to introduce the hand, and deliver by the feet.

PRESENTATION OF THE SIDES OF THE HEAD.

Are you liable to meet with presentations of the side of the child's head? They may occur when there is great obliquity of the uterus, or the top of the head should be arrested in a certain direction at one side of the superior strait.

How are you to recognize them? By the presence of an ear and a portion of the coronal, or of the lambdoid suture, a mastoid, or a zygomatic process, &c.

How are you to correct this kind of deviation? If possible, push up the head of the child by the hand, and bring it to its proper relations with the pelvis.

OTHER DEVIATIONS.

When the nape of the neck presents to the centre of the pelvis, what is the indication? To correct the deviation according to the general rules already proposed.

May it happen in practice that various parts of the body, as the hip, the back, one side, &c., may present to the centre of the pelvis? However rare, they are stated to have occurred.

How do these generally result in practice? Mostly in the presentation of a shoulder, or hip, or of the breech or feet, &c.

Should you be much disturbed by the occurrence of the third position of the breech? Inasmuch as we can have considerable command over the rotation of the child's shoulders by proper manipulations upon the breech, we should apprehend little inconvenience from this position.

Should you interfere with it before the breech has descended into the cavity of the mother's pelvis? No; it is quite unnecessary to interfere at all until the breech has fairly entered the cavity of the pelvis.

What should you then do? Assist or compel rotation on to one of the anterior planes to convert it into the first position.

Is it probable that the direction of the head is modified by the rotation of the shoulders as it descends into the strait? This idea is entertained by some who believe that in rotations of the head in cephalic

presentations the shoulders are not modified by such rotation.

What is the mechanism of breech presentations in the posterior positions? The contractions of the uterus impel the right hip, (if we take the fourth position as the type of these posterior varieties,) along the right anterior inclined plane towards the arch of the pubes, while the left hip is driven along the left posterior inclined plane to the middle line of the sacrum to become the sacral hip and usually to be delivered first. The body is then carried down in a state of lateral flexion, until the right shoulder is carried down on the right anterior, and the left on the left posterior inclined plane, to be delivered at the vulva. There is then a disposition for restitution to the oblique position which the head occupies; that is, with the spine towards the posterior part of the right thigh, and the umbilicus towards the anterior portion of the left thigh; but the occurrence, or non-occurrence of this will depend upon the manner in which the body is supported on the hand of the accoucheur, or on the bed of the mother. As the fetus is now chiefly or entirely beyond the reach of uterine action, the voluntary powers of the mother mainly drive down the head of the child with its occiput on the right posterior inclined plane to pass on the perinæum, while the chin, mouth, nose, eyes, forehead, and bregma successively escape under the arch of the pubes.

Is it safe for you to attempt rotation in a direction opposite to that which it would spontaneously take, and thus convert it into an anterior position? Some practical accoucheurs think it safe and easy after the shoulders are delivered.

At what part of the pelvis can this forced rotation be effected? While in the cavity and not in either of the straits of the pelvis.

What should you do with a sixth position of the pelvis? Endeavor first to convert it into a fourth or fifth, and when the shoulders are delivered, by

the aid of the finger convert the head into a first or second position.

Why can we do this with greater safety than in cases of original cephalic presentations? Because we are in these cases able to modify the direction of the body to that in which we force the head.

DEVIATED BREECH PRESENTATIONS.

Are breech presentations liable to any deviations of position? They are: hence we may have presentations of the loins, or either one of the ilia, &c.

Do deviations of the breech usually become rectified spontaneously? Usually they do.

Suppose, however, there should be great delay in the descent of the breech, should any attempts be made to rectify them? It would be proper to facilitate the delivery, by rectifying the position.

HOW TO RECTIFY THEM.

What is the rule, in reference to the use of the hand in these deviated positions of the breech? Pass up that hand the palm of which will look towards the abdomen of the child.

BRINGING DOWN THE FEET IN BREECH PRESENTATIONS.

Can you ever bring down the feet to any advantage? The advantages of this manipulation would rarely be commensurate with the risk of attempting it, unless the breech is high up and the child easily moveable in the uterus.

Suppose it becomes necessary to bring down the feet in original breech presentations, how would you proceed to do it? The soft parts being sufficiently dilated, introduce the proper hand, push up the breech if necessary, then pass it along the thighs to the knees, to descend upon the legs and seize the feet.

Which hand should you use? That, the palm of which looks to the abdomen, or the back part of the thighs of the child.

Do you bring down the feet in the same position at which the breech was situated? This would always be right, as forced rotation can in such cases, if necessary, be effected by acting upon the legs, when they are brought down.

Suppose the labor be far advanced, and the breech becomes arrested in the cavity of the pelvis, or inferior strait, what then would you do? Attempt to bring down the breech by passing up the hand and fixing a thumb in one groin and a finger in the other.

FILLET.

Suppose there was not a space sufficient for the passage of the hand and breech together, what instrumental means have you? The fillet, which if it can be applied, would be well adapted for this purpose.

What is the fillet? A thin strong silk ribbon, or a thin linen tape of such width as to admit its being passed along a fold in the ham or groin.

How is this to be effected, while this fold is still within the pelvis? This instrument properly lubricated, is to have one of its extremities doubled up in numerous plaits or folds, which are to be carried upon the point of the index finger of the proper hand and applied to the fold in the groin or ham; the fillet is then to be passed on the point of the finger till it is found on the opposite side of the limb; the plaits are then to be drawn out at the vulva, and thus the fold of the groin or ham, will be secured in it. With this tape or ribbon, a very considerable degree of force can be exerted and very efficient aid often rendered.

What resources have you for the application of the fillet, if the fold of the ham or groin is beyond the reach of the finger? A slightly curved silver canula, containing a watch-spring, with an eyelet mounted upon it; this eyelet having a small loop of strong thread in it is to be carried up to the fold in the ham or groin, upon the end of the canula, it is then thrust

forward along the fold to appear at the opposite side of the limb, the end of the fillet is to be passed through this loop, the steel-spring stillet is then to be retracted, and the fillet thus drawn over the groin or ham, and its extremity brought within reach of the hand of the accoucheur, who is thus enabled to act with it.

BLUNT HOOK.

What other instrument have we for the delivery of the hips? The blunt hook.

Fig. 89.



Where are you to fix it? In the groin if you need to aid descent of the breech, or in the ham if you have to use instrumental assistance, in cases of presentation of the knees.

How is it to be prepared for use? Properly warmed and lubricated.

Is it proper to apprise the patient or her friends, of the necessity of its use? With few if any exceptions, the necessity for all such instruments should be explicitly stated, and consent obtained.

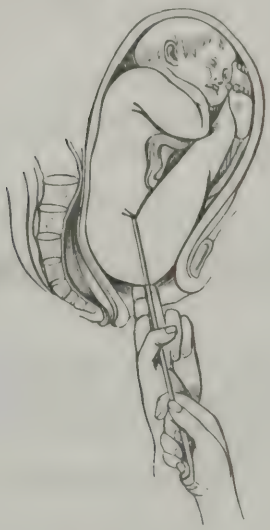
Does the introduction and use of this instrument give pain to the mother? None, if properly man aged.

Into which groin or ham, is it to be passed? Into the sacral groin or ham if possible, though it is usually most convenient and even better to fix it in the pubal limb, while in the upper part of the pelvis.

How are you to guide the instrument to its point of application? Upon the end of one or more fingers, to the body or thigh of the child, and when passed sufficiently far onward the end of the hook

should be made to slide around on one of these parts to the fold into which it is to be fixed.

Fig. 90.

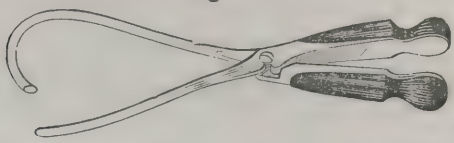


To whom is due the credit of having placed a guard upon the blunt hook, to render traction with it less hazardous to the groin or ham of the child when either is too large to allow the end of the hook to pass securely behind it, or to protect the mother from injury when the groin or ham has to be seized so high up that the point cannot be easily reached by the finger? Dr. John Livingston Ludlow, of Philadelphia.

How is this guard to be applied? First put the hook on the part on which the traction force is to be exerted, then carry the point of the guard to that of the hook, when if the notch will well adapt itself to

the pivot on the shaft of the hook, it will form a loop, less injurious, and more reliable than that of a fillet.

Fig. 91.



Can you use the blunt hook to any advantage in cases in which it is difficult to bring down the arms of the child with the fingers? Its use is sometimes indispensable, when the finger of the accoucheur fails to accomplish the object.

In what particular case, can the blunt hook be resorted to, for the delivery of the *head*, in breech presentations? When it is impossible to produce flexion by the hand or vectis.

How are you to use it, and where are you to fix it? First, try it in the mouth carefully, next, it may be fixed upon the lower edge of the orbit.

PROLAPSE OF THE UMBILICAL CORD.

Does the descent of the umbilical cord ever complicate labor? It does very materially, so far as the life of the child is concerned, unless the labor is very rapid and speedily terminates.

How does it do this? By the risk of pressure upon the cord, and arresting the circulation through it, and speedily destroying the child by suspending the process of hematosis.

What is the indication in prolapsus of the umbilical cord? To carry it above the superior strait, and let the head descend first.

How are we to retain it there? Some attach it to loops at the ends of flexible catheters, but the better plan is to carry it up in a pocket, on a piece of whale bone, above the superior strait, and retain it

till the head fairly engages, then withdraw the whale bone and leave the cord and the pocket to be delivered after the child.

Should you expect to gain any benefit by bringing down the feet, in such cases? We think this rarely, if ever advisable, as the cord would still be in danger. If reduction of the cord be impracticable, we would employ the forceps if the head were within reach.

TOO SHORT A CORD.

Can a very short cord complicate the labor very seriously? It may slightly retard delivery in some cases, but the chief inconvenience it produces is from the sudden dragging out of the placenta, and sometimes also the uterus with it, and causing inversion of that organ.

TOO LARGE A HEAD FROM HYDROCEPHALUS OR ANY OTHER CAUSE.

Do preternatural enlargements of the child or of its head, ever complicate the labor? Enlargements of this kind may not only complicate the labor, but render it impracticable without the aid of proper instruments.

What practice is indicated under such circumstances? Tap the child's head, evacuate the water, or open the head and evacuate the brain; complete the delivery by the forceps or the crotchet, if either be necessary.

Does the base of the cranium ever offer any special obstacle to delivery? Rarely, if ever, provided it be brought down in the proper direction.

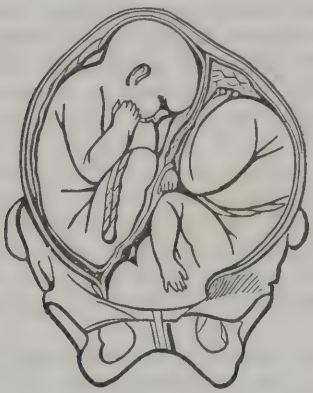
In what direction is the base of the cranium to be brought down, after the vault has been removed? Always, if possible, with its facial extremity foremost. In cases in which the pelvis is of normal size and this direction is easily followed, such change in the position of the face is less necessary, as in many,

perhaps in most, such instances, the head can pass in almost any direction after the vault of the cranium has collapsed, after the escape of the brain, or even the serum from a hydrocephalic enlargement.

DOUBLETS OR TRIPLETS.

Do you consider labor with twins, as more hazardous to the mother than single pregnancies? Not often so.

Fig. 92.



Are evidences of two or more fetuses in utero conspicuous, usually? There are few, if any rational signs to be depended upon as evidences of compound, or twin, or triplet pregnancy.

What is the most certain means of diagnosis of compound pregnancies? Auscultation.

What must you hear to convince you of the existence of twins or triplets? The sound of two or more hearts, each at different parts of the uterus.

What are the principal causes which render twin or triplet cases of labor more tedious? The great

distension of the uterus, and the unfavorable direction in which the contractions fall upon either of the fetuses.

Is the second stage rapid? It is usually so, when once one fetus is fairly engaged, because it is usually really smaller than when it is simple pregnancy.

Is there any more danger in the third stage of labor in compound, than in simple pregnancies? In consequence of the great distension of the uterus during the latter periods of pregnancy in such cases, it is more liable to acquire an atonic state, and hence the greater risk of hemorrhage, &c.

Are labors in twin cases, liable to become complicated by the descent of any portion of the other child when one has originally presented? This accident has been known to occur, and it is easy to suppose that this complication is often liable to happen.

Suppose the head of one child, and the feet of the other should engage in the pelvis at the same time, how should you manage the case? If possible, push up the feet, and let the head descend; but if not, apply the forceps with a view to deliver the head by the side of the feet; if this expedient should fail, it has been advised to resort to craniotomy, and embryulcia.

What other complications may take place? A great variety; one of the most difficult and interesting, perhaps, is that in which as one descends, with the pelvic extremity first, its chin becomes locked under the chin of the other, which was presenting the cephalic extremity, and which had gotten down into the cavity of the pelvis.

How should you proceed with a view to save the life of one child? Eviscerate the child which has descended, detruncate it, leave the head in the cavity of the uterus, push it up above the superior strait; then deliver the second child, and afterwards remove the head of the first.

OBLIQUITIES OF THE UTERUS.

Do any complications of labor occur from obliquities of the uterus? It is believed that many cases of complication or deviation, depend upon obliquities of the uterus, by which its axis is thrown out of a line with that of the pelvis.

In what direction do these obliquities usually occur? Laterally and anteriorly.

Do obliquities of the uterus usually correct themselves? They mostly do by the aid of the contractions of the abdominal muscles; not always however, until after they have caused serious deviation in the direction of the presentation of the fetus.

How should you correct those deviations which interfere with ready delivery? Generally by placing the patient on the part of her body opposite to that to which the uterus is inclined.

Are you justifiable in making any attempt at correction within the pelvis? This may sometimes be done advantageously by acting on the orifice of the uterus steadily, but moderately in the absence of a pain, and retaining it in the acquired position during the next pain, &c.

SOMETIMES DIFFICULT TO FIND THE OS UTERI.

Are there any cases in which the os uteri cannot be reached by the finger at the commencement of labor? Cases of this kind have been met with, and the ignorant accoucheur has been persuaded that there was no os uteri at all, and from the apparent necessity of the case, has proceeded to make one with his bistoury.

How is this occurrence to be explained? Either by the very considerable anterior obliquity of the uterus, or by the very great development of the anterior portion of the neck of the uterus, or both of these together.

By what plan of practice is it to be corrected? By

passing a bandage around the abdomen of the patient, and thus compressing the fundus and body of the uterus backward; then wait until the first stage of labor is nearly completed, by which time you can reach the anterior lip, which you can draw gently forward.

CAUSES ARRESTING THE HEAD ABOVE THE SUPERIOR STRAIT.

How are you to account for the occurrence of cases in which the head of the child, instead of engaging in the centre of the pelvis, becomes arrested upon the top of the pubes? They most probably depend upon great relaxation of the muscles at the lower part of the abdomen, impacted feces, or pelvic tumors.

How are you to manage cases of this kind? Make pressure upon the hypogastric, or rather upon the pubic region. If the case offered any unusual difficulty, we would propose the application of a firm bandage around the pelvis, and then urge the patient to take several successive pains in a sitting or standing position strongly inclined forwards. In all cases of impaction of feces the rectum must be cleared by injections or instruments.

LABOR COMPLICATED WITH PROLAPSION OF THE BLADDER, VAGINA, &C.

Fig. 92.



Do not prolapsions of the bladder, or of the vagina or the bowels, sometimes complicate labor? The progress of labor may be much retarded by a vaginal vesicle as shown in fig. 92, by prolapsion of the vagina as well as in some cases by the spreading out of the anterior lip of the uterus itself over the head of the child, and between it and the pubes.

How is the difficulty arising from either of these

causes to be overcome? If it arise from a prolapsed bladder, the urine should be drawn from it by a catheter if possible—afterwards it, or the vagina, or the lip of the uterus must be carried upon the tip of one or more fingers above the top of the pubes, and there retained till a pain forces the presenting part of the child below it.

DR. B'S. CASE OF HERNIA OF THE INTESTINES INTO THE PERITONÆL CUL-DE-SAC.

What is Dr. Meig's description and treatment in his excellent work on obstetrics, of a case of labor complicated by a prolapsion or hernia of the bowels? Mrs. R. was in violent labor, which had continued long, but without any effect. Dr. B. requested me to visit her with him. The vagina was pressed forwards towards the symphysis pubes, by a tumor behind it, filling up the excavation of the pelvis and preventing the descent of the head. I learned by examination that this tumor consisted of a great mass of intestinal convolutions that had fallen down below the strait and that was kept there by the violent tenesmus, as well as by the gravid womb above it. Indeed the mass was to a certain extent, incarcerated within the excavation of the pelvis. The efforts of the patient to bear down upon her pains were most violent, and the distress accompanying them apparently intense. I introduced my fingers into the lower part of the vagina, and thrusting the posterior wall of that tube backwards, got the points of the fingers beneath the tumor, which occupied the recto-vaginal *cul-de-sac* of the peritonæum. A little patient manipulation caused portions of the gut to ascend into the abdomen, and in a short time the whole mass fled upwards above the brim, whereupon the expulsive efforts of the womb being no longer opposed by it, the child was speedily and safely born.

LABOR COMPLICATED BY LESIONS OF FUNCTION OF THE NERVOUS, VASCULAR, OR MUSCULAR SYSTEM.

Are there any abnormal conditions of the patient which may interfere with the function of parturition? There are many depending upon conditions of the nervous, vascular, and muscular systems.

RIGIDITY.

What is the most common of these abnormal conditions? Rigidity of the os uteri, or perinæum, from original tonicity, depending perhaps upon plethora, and again in some instances the rigidity may be caused by an alteration of structure, as adhesions, cicatrices, &c.

What process most readily overcomes the rigidity? Increased secretion, promoted by bleeding, warm bathing, fomentations, &c.

Does rigidity ever depend upon irritation, the cause of which is direct or remote? It may, and no doubt does.

May the hand of the accoucheur ever be the cause of this rigidity? By too frequent, or too roughly touching the orifice of the uterus, it may become irritated, rigid, and even inflamed.

May too early a rupture of the membranes give rise to rigidity? It is probable that in some cases the too early drainage of the waters, and the pressure of the presenting part upon the os uteri, may cause irritation and consequent rigidity.

TREATMENT OF RIGIDITY.

By what means can the accoucheur properly expedite the delivery under such circumstances? By such *medical* treatment as may diminish the vital tone. If the stomach be loaded with impurities, gentle emetics, washing out the stomach, &c. Much may be done, by acting on the bowels by the warm enemata, purgatives, with castor oil, &c. Bleeding is very use-

ful, particularly if the patient is febrile. After bleeding, nauseating diaphoretics, &c., warm injections, warm fomentations to the vulva, favor relaxation. Advantage will be derived from keeping the patient's mind calm and confident. Anti-spasmodics, as assafœtida, camphor, &c.; even laudanum may be beneficially employed in some cases. As local adjuvants, the ointments of belladonna, stramonium, &c., may be applied to the os uteri; anodyne enemata, from sixty to one hundred drops of laudanum, may be given at once, after the bleeding, or purging, &c.

Is it often necessary to divide the bands or cicatrices, to overcome the constriction? It is rarely necessary, in the cicatrices or adhesion of the vagina or perinæum, and scarcely ever in cases of rigidity of the os uteri, if proper medical or constitutional means are resorted to.

What danger would be involved in the division of the os uteri, under such circumstances? Extension of the incisions to a degree equal to a dangerous laceration of the uterus.

IRREGULAR CONTRACTIONS OF THE UTERUS.

May labor be complicated or retarded by irregular contractions of the uterus? It may to a greater or less degree.

How are these irregular contractions diagnosticated? By the woman feeling the pain in one particular spot, and by the want of expulsive effort.

Where may these spasmodic contractions occur? In various points, as the body, fundus, and orifice of the uterus.

Why do we rarely have spasmodic contractions in the os uteri, in cases of regular presentation of the vertex? Owing to the fact, that the orifice does not embrace the neck of the child, in consequence of the manner in which its chin is applied to the thorax.

May the internal os uteri, become spasmodically contracted? It is believed by some accoucheurs that it may

What effect has this upon the advancement or retardation of the child? The child descends to the superior strait, during an expulsory effort, and recedes at once, when the voluntary powers become suspended.

TREATMENT.

What is the proper practice in this case? Venesection, anodyne injections, &c., to suspend the irregular actions of the uterus. Avoid turning and forcible delivery merely because the delivery is delayed on this account.

CONVULSIONS.

Are convulsions during parturition ever dependent upon rigidity? There is much reason to believe they are sometimes dependent upon this cause, as in the unavailing effort at delivery, the brain becomes the seat of such degree of congestion, as determines irregular or spasmodic contractions of the muscular system.

Why do you call them *puerperal* convulsions? Merely because the woman affected, is in a pregnant, or puerperal state.

Do you consider them different from convulsions which may occur in unimpregnated women? They do not differ essentially from those which may attack unimpregnated women, or even nervous men.

CLASSIFICATION OF PUERPERAL CONVULSIONS.

How many varieties of these convulsions, do you generally recognize? Two; hysterical and apoplectic.

Which is the most frequent variety? The apoplectic.

Which is the least dangerous? The hysterical variety

Upon what does the latter variety most frequently depend? Irritability of the nervous system.

SYMPTOMS OF HYSTERIC PUERPERAL CONVULSIONS.

What are the general symptoms of this variety of the

affection? They are similar to the higher grades of hysterical convulsions in unimpregnated women.

What effect have these convulsions upon the labor? They usually suspend it, inasmuch as there appears to be a sort of metastasis of muscular contraction of the uterus to that of the body generally.

SYMPTOMS OF THE APOPLECTIC PUERPERAL CONVULSIONS.

What are the symptoms of the apoplectic variety of convulsions? Those of congestion; mostly pain in the head, sometimes intense in some one spot; there is loss of vision, perversion of the hearing, &c., pulse full, slow and apoplectic. Muscles of face much affected; sibilating noise; frothing at the mouth; convulsion of the anterior muscles of the face and body; the patient sometimes falls into a comatose state, and remains so, until another convulsion comes on, though sometimes she promptly recovers.

What is the cause of these convulsions during labor? They are supposed to depend upon the violence of the uterine and general expulsive effort reacting on the brain.

What are the usual post mortem appearances in cases of these convulsions? Congestion of numerous vessels in the brain and its coverings, with serous, or sanguineous effusion.

Are there some cases in which death occurs, without any effusion, or apparent lesions of the brain? There are; and this fact is calculated to lead to the conclusion, that the convulsions may depend upon some other cause than determination of blood to the nervous pulp within the cranium.

What effect have these convulsions upon gestation? Women who have these convulsive movements during pregnancy are liable to have the fetus die in utero, or to abort it before it is completely developed.

What effect has gestation upon the convulsions? Though pregnancy is not always directly a cause of

these morbid movements, yet the woman, in some instances, is subject to have them occasionally while pregnant, or a repetition of them, until the child is delivered either at term or prematurely.

Are the pains usually suspended upon the occurrence of convulsions? When convulsions occur during labor, the regular contractions of the uterus become suspended—a mere fluttering kind of movement is observed.

TREATMENT IN CASE OF CONVULSIONS.

What are you to do in reference to the condition of the uterus? Let it alone in most cases, especially during the first stage of labor. Attend to the nervous and vascular systems alone, and allow the uterus to take care of itself. This it will usually do, if the tranquillity of the nervous and general muscular system can be restored. If the labor have advanced to the second stage, you may sometimes deliver with the forceps, if the head be low in the pelvis.

How should you treat the apoplectic variety of these convulsions? Bleed, twenty, thirty, forty or fifty ounces, until you empty the blood vessels and relieve the plethora; then resort to the usual treatment for apoplexy—cold to the head—mercurial cathartics, &c.,—active enemata—cups and leeches may sometimes be employed after one free bleeding. When vascular depletion has been carried sufficiently far, sinapisms, blisters, &c., may be used as revulsives or counter-irritants. When the congestion is thus relieved, opium or camphor may be given in combination with calomel and ipecacuanha, and after the system shall have been properly reduced, and the disease controlled, mild tonics, as valerian, &c., may be administered.

Should you interfere with the process of gestation, supposing it be not complete? We think not, at least not until after all the usual means of treatment have been fully employed. Should the convulsions persist

under such circumstances, we might consider the propriety of premature delivery.

Are some patients incident to continued effects of convulsions, or rather to a state approaching that which results in convulsions? Yes; there often remains a disposition for congestion of the large blood vessels, with great irritability of the nervous system.

What is the treatment proper for such a state? Revulsion by moderate bleeding, and the use of sinapisms, &c.

INERTIA OF THE UTERUS.

What do you mean by the phrase inertia of the uterus? That condition of the organ in which it does not obey the instinct of contraction.

What are its general causes? During the first stage of labor, it may depend upon plethora in the uterus. Sometimes it depends upon a transference of the irritation from the uterus to the brain, heart, lungs, &c.—sometimes upon some diseases of the uterus, or general debility from phthisis, uterine hemorrhages, &c.

May not inertia occur while the uterus possesses a sufficient amount of power? It may, and then it merely requires to be stimulated into action.

TREATMENT OF INERTIA.

How are you to manage a case of inertia of the uterus? During the first stage of labor, but little interference is necessary: we should endeavor to ascertain the causes of the inertia—if plethora, bleed—if constipation, purge—if from irregular distribution of the nervous influence, give those medicines calculated to act upon and regulate the nervous system.

How would you stimulate the uterine fibres moderately? By friction, by cathartics, by warm teas, &c.

How in the second stage? If the uterus be distended, rupture the membranes, provided the os uteri be sufficiently dilated; then act slightly upon the os tincæ with the finger, by a slight traction in different directions. If this did not succeed we would administer the ergot.

ERGOT.

Would you consider ergot as a dangerous remedy? Highly so, if not very judiciously resorted to; but very important and useful in proper cases.

Why has it probably been productive of such fatal effects in practice? Because it has been resorted to in cases when the advancement of the child was opposed by vital resistances, as before the os uteri or the perinæum was sufficiently relaxed to admit of ready egress of the fetus, forcibly compressed by the *ergotic* contraction of the uterus. Furthermore, it has been productive of immense evil when administered in cases of mal-position of the child, or when there has been deformity or deficiency of amplitude in the pelvis.

Under *what* circumstances *can* you administer it with propriety? Dilatation or relaxation of all the soft parts, favorable positions, or presentations; absence of *any mechanical* resistance at either of the straits of the pelvis. It is rarely proper to administer it in cases of first pregnancy, because of the tenacity of the vital resistances in these cases.

What are the usual effects of the ergot upon the uterine fibre? It stimulates it to tonic contraction, by which nearly every portion of it acts in the direction to diminish its capacity, and the whole organ, therefore, acts with great and persistent force upon the body within its cavity.

ERGOT SOMETIMES ITSELF INERT.

Does the ergot sometimes fail in producing such effect? It does so sometimes, owing either to the

idiosyncracy of the patient, or to the bad quality of the article.

Should you ever give ergot in any cases of mechanical obstruction in labor? There is, probably, no case of this kind in which the use of ergot would be proper.

HEMORRHAGE AT OR SHORTLY AFTER THE TERMINATION OF LABOR.

To how many varieties of hemorrhage may the patient be incident in the latter stage of labor, from inertia of the uterus? Two, the open, and the concealed hemorrhage.

What is the distinction between these two varieties? In the first, the blood flows from the uterus through the vagina, nearly as fast as it escapes from the orifices of the uterine vessels, and is mostly readily discerned and announced by the patient herself, or may without any difficulty be detected by the nurse or personal attendant. In the other variety, on the contrary, the patient may not evince the slightest consciousness of the existence of the effusion from the patulous orifices, nor can the nurse or physician become persuaded of its occurrence until the patient has fainted, the pulse has failed, or become enfeebled at the wrist, or her uterus has been found to have reacquired, in part, or entirely, the size of the recent gravidity.

Which of these two varieties is most alarming, and dangerous? The first, usually most alarms the patient, by the consciousness of its occurrence, and the apprehension of dangerous consequence upon it—while the latter or concealed variety most perturbs the physician, because it may have reached a point of extreme danger before he has been apprised of it, or had it in his power to control it.

MANAGEMENT OF HEMORRHAGE.

What is the first object of the practitioner in cases of hemorrhage from the uterus; in the third stage of labor? To excite the tonic contractions of the organ, and thus cause it to close up the open venous orifices.

How should he effect this? By friction; by kneading, as it were, upon the uterus; by the application of a cold hand, cloth, or sponge, or plate of snow, or ice upon the pubic region; by powerful compression; by the passage of a hand into the cavity of the uterus; by introducing within it a sponge saturated with vinegar, or by passing up a peeled juicy lemon; allowing these acid vehicles to remain until expelled by the contraction of the uterus, &c.

Would you give ergot in any of these cases? It might be given if at hand, particularly if in the form of tincture, though it is the experience of some practitioners that it rarely acts in cases of great prostration from hemorrhage.

HOW TO PREVENT IT BY ANTICIPATION.

Knowing your patient subject to atony and hemorrhage in the last stage of labor, would you give the ergot in anticipation? We would give it just as the child was about to be extruded.

Would you at once remove the placenta from the vagina, or leave it in until the hemorrhage is arrested? Pass our hand beyond the placenta, remove the coagula we may meet with, and as the uterus contracts allow it to come away.

What general rule should you observe in reference to the mode of preventing this accident? See that the different stages of labor go on regularly.

Should you remain by your patient until she reacts after her labor? You should never leave her till you have witnessed this state.

Suppose your patient arrives at the term of gesta-

tion, and she becomes greatly prostrated by phthisis, pulmonary hemorrhage, &c., would you think proper to bring on labor and expedite her delivery? If we can arrest the cause of the exhaustion, we ought to wait till term; but if she be constantly sinking, it is thought better to deliver promptly, but cautiously, while the patient is yet capable of furnishing the means of hematosis to the child.

Suppose your patient be affected by syncope during labor or pregnancy, should you generally be alarmed? Not generally; we are rather to regard it as depending upon a want of regular distribution of the nervous influence, but usually easily managed by the use of cordials and aromatic stimuli, applied externally, or administered internally as the case may require.

CONCEALED HEMORRHAGE.

What is the usual process by which occult hemorrhage occurs? The blood which escapes from the patulous orifices of the vessels on the inner surface of the uterus, becomes coagulated at the os tincæ, which it plugs up—the hemorrhage, thus prevented from escaping externally, goes on, and the tonic contraction of the uterus being absent, it distends the uterus, and the quantity thus abstracted from the system becomes so great that the patient dies at once, or falls into a state of syncope, from which she can be revived only by the most prompt measures.

What influence has the presence of coagula in the vagina in this case? It appears to paralyse the uterus, and thus prevent it from closing up its venous orifices by tonic contraction.

What should be done in such cases? Promptly and resolutely carry a hand through the vagina into the orifice, neck or body of the uterus, break up the coagulum, let the fragments pass by the palm, wrist and arm, detaining these in the cavity into which they had been introduced, until the contractions of the uterus expel them.

How should the opposite hand be employed during this time? Most assiduously in promoting the contraction of the uterus by pressure, or the application of cold, or both, upon the abdomen.

What influence would galvanism probably have in promoting the contraction, arresting hemorrhage and preventing its recurrence. If a suitable battery were at hand it would be worthy of a trial in cases of great atony of the uterus.

LABOR COMPLICATED BY LESIONS OF STRUCTURE OF THE UTERUS—RUPTURE OF THE UTERUS.

To what particular accident is the uterus liable, during the parturient effort? Lesion of its structure, either partially or entirely, that is, there may be a separation of some portion of its tissue, or the rupture may extend through its entire substance involving the peritonæum.

What are the symptoms of rupture of the uterus? A sudden suspension of the alternate contractions, great prostration of strength, hurried or gasping respiration, rapid pulse, &c.

What are the consequences of this accident? They are dependent upon the extent of the accident: the patient may recover from a partial rupture, but when it is complete, the result is almost always fatal.

What are the indications of the treatment in this case? If the rupture take place in the first stage of the labor, gastronomy should be resorted to immediately, with a hope to save the child, but if in the second stage, version by the feet, or delivery by the forceps, should be promptly effected.

Suppose the child has escaped into the cavity of the abdomen, what should you do? Placing one hand externally over the situation of the child, we should pass the other into the pelvis, and through the rent in the uterus endeavor to find the feet, and bring them down.

What if the rupture should occur in the vagina, is

your chance of delivery greater? It is, inasmuch as in such case the opening is not shut up by contraction.

Would you think you might resort promptly to the operation of gastronomy, if you could not deliver the child through the natural passages? That would be the only proper course.

Does this rupture ever arise from rigidity of the os uteri or perinæum, while other parts are subject to ramollissement? It is believed that it does.

Under what circumstances would you use the forceps or crotchet in such an accident? In case the head was still in the cavity of the pelvis, though the body had passed into the cavity of the abdomen.

BLUNDELL'S INSTRUCTIONS.

What are Blundell's instructions to accoucheurs in reference to their duties in this momentous accident? He tells them that the management of these cases, so far as they admit of management, may be given in a few words. If the child have been thrown into the world, the accoucheur has nothing to do but to treat the patient on the ordinary principles of medicine and surgery. If disruption occurring it is incarcerated amongst the bones, so as to remain fixed in the pelvis, though the body lies forth through the rupture, you may then, properly enough, apply a pair of forceps; in this way superseding the necessity of the operation of turning. When lacerations of the womb occur, however, it will generally be found that the child enters the peritoneal sac, the placenta immediately following it, the womb emptying itself as effectually as when it expels the ovum through the pelvis. Now, by examination, this ventral lodgement of the pelvis is easily made out, and when ascertained, it then becomes your office to remove the coat, raise the sleeve of your shirt, to lubricate the hand, and to carry it resolutely, but gently and steadily along the vagina and through the ruptured opening, so as to enter the cavity of the

peritonæum, lay hold of the feet and bring away the child by the operation of turning. Beware of grasping the intestines and pulling them away with the feet. Provided no injury be inflicted on the mother, the sooner the operation of turning is commenced and completed the better, because if the child is left long in the peritonæal sac, it perishes in consequence of the suspension of the function of the placenta, which lies detached among the intestines; but if the fetus is removed promptly, there is a reasonable hope that it may be abstracted alive, and if no violence be employed, promptitude of delivery may also facilitate the recovery of the mother. The child taken away, the placenta is to be extracted also; the operator being careful not to leave any part of it behind, and in this abstraction great care must be taken that you do not draw down any other parts together with the after-birth, and more especially the intestines. Let the mind in these dreadful emergencies be kept tranquil and unshaken; unless you are undisturbed and settled steadily upon obstetric principles, you are unfit to act. If you are unequal to the duty, give up the management of the case altogether, and send for further assistance. Do not mislead yourselves with the notion, that these cases are desperate, and therefore it matters little what is done by the patient. One recovery I have witnessed, and there are others on record.

What is the history and his mode of acting in the case which he saw recover? "A woman in the neighborhood of Guy's Hospital, had a contraction of the pelvis—I was called in, in consequence of a collapse of the strength, and when I examined, I found the child lying in the peritonæal sac, distinct from the uterus, the aperture of which was contracted, and I found further, a large transverse rent opposite the bladder. Well, in this case, agreeably to the rule, I determined to turn, and for this purpose introducing my hand into the peritonæal sac, I perceived the intes-

times, felt the beat of the large abdominal arteries, touched the edge of the liver, and ultimately reaching the feet of the child, I withdrew it by the operation of turning, subsequently abstracting placenta and membranes, the woman recovering in a few weeks afterwards. About five years after the recovery, I saw her not so vigorous as before the accident, but nevertheless tolerably well. On very careful examination at this time, the os uteri was found to present the natural character, and not a vestige of the cicatrice was discoverable in the vagina any where above or below; the rupture therefore had been above in the uterus itself. When, in this case, my hand was introduced to turn the fetus, the womb, large as a child's head, was felt lying upon the promontory of the sacrum, above and behind the rent."

PROLAPSUS AND PROCIDENTIA OF THE UTERUS.

Are there any cases recorded in which the prolapsus of the uterus has continued to the end of gestation? In the late valuable edition of Professor Meigs' work, "Obstetrics, the Science and the Art," is related a case under the care of Dr. W. S. Haines, the present resident physician of the Blockley Hospital, Philadelphia, in which the prolapse of the vagina was so great as to protrude some distance beyond the vulva, at the time of labor, at seven and a half months of gestation. Dr. M., whose entire work should be carefully read by every student and practitioner of obstetrics, has given a drawing which he considers a faithful representation of the condition alluded to. Several instances are reported—one by Dr. Ashwell, others by American physicians, in which women afflicted with complete procidence of the gestative organ, have continued in this distressing condition till delivered at or near full time.

Does this condition of the uterus necessarily interfere with easy delivery when the uterine contractions are established? Although it has been supposed that

the principal obstacle to the easy completion of the second stage of labor was to be found in the curvatures of the pelvis and the resistance of the vagina and perinæum, yet Ashwell had recourse to the forceps, and other gentlemen to embryulcia, for the completion of the delivery of the fetuses in their respective cases. It is not easy to conceive that instrumental deliveries must be necessary in all cases of procidentia of the uterus.

INVERSION OF THE UTERUS AFTER DELIVERY.

What is another marked consequence of atony of the uterus occurring during the second and third stages of labor? Inversion of the uterus.

What are the usual causes of this accident? Firstly, great weight of the placenta. Secondly, too early and too forcible expulsive efforts of the mother. Thirdly, the continued and forcible bearing down of the mother after extrusion of the child, &c. Fourthly, Dewees and some others think it may depend upon irregular contractions of the fundus, &c.

DEGREES OF INVERSION.

What are the degrees of inversion of the uterus? Three are generally recognized in this country, viz.: first, simple depression of the fundus—second, portion of the fundus passed the orifice—third, complete inversion, in which the whole organ is turned inside out.

What degree of inversion causes the most serious consequences, the complete or incomplete? The incomplete.

Why is this so? Because in this case the portion within the neck is strangulated, and the circulation is impeded through it, and hence venous hemorrhage is kept up, inflammation and sloughing may also occur from this cause, while in cases of complete inversion, all contraction is obviated, and although more or less he-

morrhage occurs frequently or constantly, yet there are no consequences of strangulation in the part.

DIAGNOSIS OF INVERSION.

What is the diagnosis of this accident? The moment of its occurrence, the patient complains of a sudden sinking about the pelvic region, shrieks out, becomes faint, &c. Upon applying a hand at the vagina, a mass of greater or less size, depending upon the degree of the inversion, will be perceived without or within the vulva, or perhaps even within the os uteri itself, if it be merely in the first degree, (though in this there is usually less sense of exhaustion.) If it be external to the os uteri, the mass presents a rather dense structure, with a soft, spongy, more or less rugose surface, not necessarily sensitive to the touch.

How can you distinguish this internal surface from a polypus tumor? This may be very difficult in some cases, but generally perhaps the surface of the uterus is more rugose than that of the polypus.

May the practitioner not mistake this for a coagulum, a placenta, or a presentation of another fetus? This would require care in his physical examination, but then with these the patient does not suffer in the same manner.

TREATMENT OF THE INVERSION OF THE UTERUS.

Remembering that the fundus of the uterus, which in the normal condition of things, is uppermost and at the farther end of the axis of the organ, is now the first thing to be seen or handled, it will be proper to watch for the absence of contraction, and taking advantage of this moment, press upon its centre with the points of the fingers of the hand brought into a conical form, and steadily attempt to carry it up along the direction of the axis of the uterus till the entire hand, wrist, and part of the arm have passed through the os uteri—even though it should be necessary to

carry the fundus by this process as high as the umbilicus of the patient: there retain it until a violent contraction of the organ expels it. Observing carefully by the other hand now to be applied upon the hypogastrium, that the contracting and diminishing organ retains its proper rotundity; but if this be not practicable, desist, and leave the case to the gradual physiological changes which may be effected in it, to adapt it to its new situation.

How are cases of partial inversion to be managed? It has been proposed that the reposition of such cases is more difficult than when the inversion is complete. Still it is proper to attempt it by the means indicated above, and if this fails, to seize the fundus and body, bring them entirely down, and if reduction in the absence of contraction be not then easy, leave the case to subsequent palliative treatment, till the hemorrhagic tendencies are subjected to a healthy standard.

LABOR COMPLICATED WITH INCAPACITY OF THE NATURAL POWERS TO COMPLETE EXPULSION OF THE CHILD.

May it occur that a woman may be well formed, have her labor come on at time, her child present either pole of its ellipse favorably, and yet be incompetent to complete its birth by her own unaided power? It may and does so occur, that some women whose children present well, or whose deviated presentation has been rectified, fail of ability to complete the delivery at all, or not without the most exhausting efforts.

What is the duty of the accoucheur, patient, and society under such circumstances? It is the duty of the accoucheur to exercise a prudent judgment, and a high intelligence, as to the nature of the patient's condition and her prospects of success, or otherwise in the effort she is making, to give her the full benefit of this judgment as to whether she will or will not be able to complete the delivery safely to herself or infant by her own unaided powers, frankly to inform her if

he believes this impracticable, advise her as to the means of assistance which science and art have placed within his reach, and which he (if he have been properly trained) may make available for the benefit of herself and child. It is the duty of the patient to regard the counsel which a properly educated physician may communicate under such circumstances, to ask him to be governed in his conduct towards her by the dictates of his matured discretion; to solicit of him such interference as he believes her case to require, and to submit with all possible calmness and confidence to any manual or instrumental process which may be necessary for the safe conduct of herself and her child through the perils to which either or both may be unfortunately subjected; and furthermore, it is the duty of society, most earnestly, to place every reasonable facility in the way of those who, from promptings of humanity, or even of self-interest, enter upon the study of medicine with a view to practise the art upon the afflicted of their fellow citizens; facilities for acquiring a thorough knowledge of the principles and rules of the art, to hold in high appreciation those persons who, at great personal sacrifice, devote themselves to such responsible and care-wearing services, to encourage and sustain them by their kind regards, and by substantial tokens to evince their gratitude to them as ministers of a vocation the most important which man can exercise towards the afflicted of his race, and particularly to those cases in which the lives of both mother and child are in jeopardy.

INSTRUMENTAL SURGERY.—CLASSIFICATION OF OBSTETRIC INSTRUMENTS.

How are the instruments used in obstetricy classified? 1. Those which do not injure mother or child: 2. Those which reduce the size of the child, for the benefit of the mother: 3. Those which subject the life of the mother to risk with a view to save the child alive.

Of what do these instruments consist? The vectis;

the fillet: the blunt hook; the forceps; the perforator; the crotchet; the craniotomy forceps; and the cranial compressors.

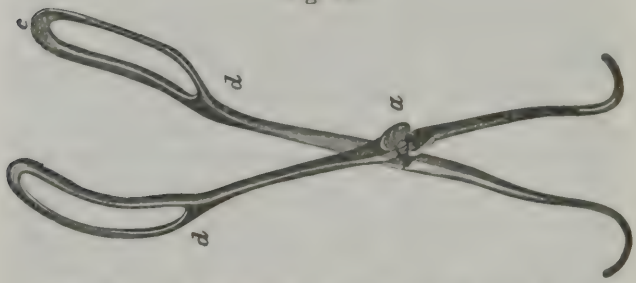
FORCEPS.

What obstetric instrument have we of much greater value than the vectis or lever? Forceps.

What do these forceps represent? A pair of artificial hands.

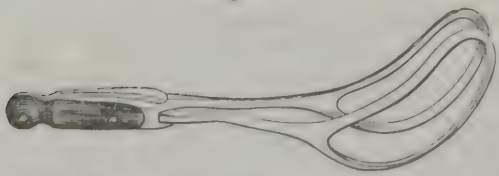
What is the composition of the forceps? Two blades so arranged as to embrace the child's head, and so constructed that they can be introduced separately, and then locked or united to each other, as shown at *d*, *d*, and *a*, fig. 94.

Fig. 94.



How do you distinguish the forceps by the length? Into English or short forceps, as shown in fig. 95, measuring 12 inches, and into French, or long forceps,

Fig. 95.



as shown in fig. 96, measuring from sixteen to nineteen inches.

What forceps are thought to be best, French or English? Upon the whole, the French forceps pro-

Fig. 96.



perly modified, are to be preferred; though many excellent practitioners prefer the English or short forceps for ordinary cases requiring the use of these instruments.

What is the mode of locking in the English forceps? At the handle end of each shank is a deep notch into which each handle of the instrument is neatly adjusted, when properly locked, as seen at *a*, fig. 96, which represents one blade of an English forceps, of the same length, viz. twelve inches, as in fig. 97, but on a larger scale.

Fig. 97.



What is the mode of locking the French or German forceps? There is a conical screw pivot near the centre of one blade and a conical notch in the other, into which the pivot is to be received. Their junction is kept secure by the screw carrying down the cone of the pivot into the conical notch, as seen at *a*, fig. 98, which gives a profile view of the two blades as locked.

What mode of junction or locking, is the best? Perhaps the German, or French, is most preferred.

What is the use of the fenestra in the blades? To permit some portions of the scalp and cranium, as the

parietal protuberances to pass through them, and thus enable them to occupy apparently less space in the

Fig. 98.



cavity of the pelvis, and at the same time to secure a more firm grasp of the head.

To what part of the pelvis, is the use of the short forceps restricted? Inferior strait, unless perhaps we except those contrived by Professor D. D. Davis.

From what parts can you deliver the head with the long forceps? From every part of the pelvis, as a general rule.

What rule have you for the application of force in the use of forceps? Sufficient to overcome the resistance, if possible, without injury to the mother.

To what part of the child are the forceps to be applied? Always to the head.

To what part of the head are they to be applied? To the sides, in all cases except perhaps one.

What is that one, if any? In occipito-iliac positions, in case rotation cannot be effected, nor the blades carried up between the pubes and the sacrum.

To which diameter of the head, are the forceps to be applied parallel? The occipito-mental diameter.

Should you give the mother any pain in the introduction of the forceps? None other than to excite the contraction of the uterus.

Is the child's head liable to receive some slight injury by the use of the forceps? This is in some cases unavoidable, when the pelvis is small or deformed, or the head badly situated, or the forceps not well constructed.

CASES FOR THEIR USE.

In what particular cases are the forceps indicated? When there is too much resistance to be overcome by the natural powers, or when the powers of the mother become enfeebled by hemorrhage, or the contractions irregular by convulsions, &c.

What condition of the os uteri must exist, before the forceps can be applied? That of dilatation; the first stage of labor should be complete if possible.

Which practice is preferable for young practitioners, forceps, or version by the feet, in cases in which the head is still at the superior strait? Version by the feet, unless well trained to the use of forceps.

Is it well for you to be provided with forceps in cases of pelvic presentations? It would be proper always to have them at command in all cases of pelvic presentations, whether original or rendered such by version, that the delivery of the head may be effected as rapidly and as safely as possible.

When the head is well situated, but some accident has happened to the mother, should you resort to version by the feet? Remembering the dangers of version, better use the forceps if practicable.

Suppose the head has passed out of the os uteri, *must* you then use the forceps; instead of resorting to version? Version would then be out of the question, and the whole consideration would be upon the use of the forceps.

Is it important you should diagnosticate very carefully before you attempt the application of the forceps? There would be hazard in using the forceps without correct diagnosis.

POSITION OF PATIENT FOR USE OF FORCEPS.

How would you have your patient placed for delivery by the forceps? She should be placed as for the operation of version by the feet.

What preparation of the patient would you have

made before you operate with respect to the bladder and bowels? They should be carefully evacuated.

How do you designate the blades? Male and female, or left hand and right hand blades.

Which is male, and which female? The male blade has the pivot, the female the notch.

What relations must the forceps hold to the pelvis as they withdraw the child's head through the lower strait? Their concave edges must always look to the pubes.

MODE OF APPLICATION.

What are the different steps in the introduction of these instruments? In the first place the consent of the patient or her friends should be obtained for the purpose, after a due explanation of the necessity and object of their use. The patient then being properly placed, the instruments are to be brought to a suitable temperature by dipping them for a few moments in warm water; the male blade or left hand blade, is to have its fenestrated extremity properly lubricated, the vulva is also to be lubricated as well as the right hand. The accoucheur taking his station between the limbs of the patient, holds the male or left hand blade in his left hand, a little beyond the middle towards the fenestrated extremity, in the same manner that he would hold a writing pen. The dorsum of the fingers of the right hand is to be applied to the left labium and side of the vagina, and the orifice of the uterus if within reach. The handle of the blade being carried almost perpendicular to the horizontal line on which the patient is placed, is now to have its point slided cautiously along the palm of the hand and the fingers, gradually approaching a parallel with the patient's body, until the blade has been placed by the side of the child's head in the direction of its occipito-mental diameter. The handle of this blade is then to be supported by an assistant, while the other blade is to be taken in the right hand, and its fenestrated extrem-

ity lubricated as the other; the left hand is now to be properly prepared, and the dorsum of its fingers applied against the right labium, side of the vagina, and mouth of the uterus if within reach. The handle of this blade is then to be carried in a nearly perpendicular direction towards the left groin of the patient, that its lower point may be slided along the palm of the left hand in the direction of the axis of the vagina, of the inferior strait of the cavity of the pelvis, and if necessary, the superior strait; as this movement is effected; the handle is of course correspondingly depressed, till it comes in contact with, and crosses obliquely, the blade first introduced, and the points of junction brought accurately together; they are then to be locked.

What is the general rule in reference to the concave and convex edges of the blades? The concave edges are to look towards the pubes, and the convex edges towards the hollow of the sacrum.

Should you always keep the point of the instrument against the head of the child? This should always cautiously be done to prevent embracing any of the soft parts of the mother between the instrument and the child's head.

What dangers may result from want of care in this matter? The inclusion of some portion of the mouth of the uterus, or even penetration into the abdomen, with the instrument.

Is it warrantable, in any case, to introduce the forceps before the head has cleared the os uteri? Professor Meigs, who is high authority, says it is not.

Is there any danger of entangling any of the soft parts in the fenestra of the blades? There is.

How are you to prevent this? By carrying up the hand as a guard in advance of the blades.

How are the blades to approach each other at the lock? In nearly parallel lines.

Should the blades always lock readily? Unless

they do, it is certain that the head is not accurately embraced.

How are you to judge whether you have the forceps properly applied to the child's head? By their locking readily, while the blades are applied in the direction of the occipito-mental diameter of the child's head, as indicated by the position of the occipital fontanelle or by the chin.

Is there any danger of passing up the forceps *outside* of the *os uteri?* There is great danger of this accident without much care in some cases.

What test have you that this has occurred? The complaint of the patient that you hurt her.

When you have the blades locked, should you make a little compression and traction effort? This should be done in order to bring the instruments to their proper bearing, and to ascertain that no part of the mother is included.

LIGATURE OR FILLET ON THE FORCEPS HANDLES.

Should you apply a fillet upon the forceps in all cases? In none except where it is important to keep up long continued and firm pressure.

Under what circumstances is the fillet necessary? When there is some defect of size of pelvis, or too great magnitude of the child's head.

PRINCIPLE OF ACTION WITH THE FORCEPS.

What is the modus operandi of the forceps? Both as levers and tractors.

Should the forceps be regarded as a double lever? They should.

Where is the common fulcrum? The pivot.

What is the usual centre of motion of these levers during the effort of delivery? The trachelo-bregmatic diameter of the child's head.

Should you be particularly careful to support the perinæum in delivery by the forceps? This should be regarded as an important object of attention.

Is it proper for you to remove the forceps as soon as the head escapes through the inferior strait? This is a good general rule.

FORCEPS IN FIRST POSITION.

In what direction are you to move the handles of the blades? From side to side of the head, and always from handle to handle.

Suppose the occiput situated obliquely to the left acetabulum, how are you to apply the male blade? Elevate the handle, pass in the blade, sweep it under the top of the head, then depress the handle rapidly to bring the blade to the side of the head, and the pivot will look towards the left groin of the mother.

How should you pass in the female blade? Pass it firmly into the cavity of the pelvis along the top of the child's head, then by insinuating the fingers under the convex edge of the blade, depress the handle of the blade to sweep it over the parietal protuberance, and allow the blade to lock with the pivot to the left groin of the mother.

Suppose the shoulders become arrested, how would you assist their delivery? Continue to act with the forceps upon the head; or lay them aside and apply one hand behind, and the other in front of the neck, make proper traction in this way; or pass up the blunt hook into one axilla, and thus make proper traction till first one and then the other shoulder is disengaged.

Suppose the head becomes arrested at the superior strait, how should you proceed with the view to assist the delivery? Ascertain, if possible, if there be any deviation; then correct it; and if there be none, or if you cannot correct it, consider what further action would be proper.

Would you turn, or apply the forceps? Turning would be safer, unless the practitioner have much experience in the use of forceps.

Can you apply them easily and safely at the superior strait? They are neither easily or safely applied at the superior strait, and should not be applied at that point under any circumstances, unless the practitioner possess great dexterity in the use of forceps.

What use should you make of the hand in the application of the blades, admitting you attempt to use them in this case? Pass it into the cavity of the pelvis till it comes in contact with the head sufficiently completely to protect the mother from injury.

FORCEPS IN SECOND POSITION

Are there any greater difficulties in applying the forceps in the second position of the vertex than in the first? When the occiput is towards the right acetabulum, the left side of the child's head to which the male blade is to be applied, is so closely directed to the anterior part of the pelvis, that when the first or male blade is properly introduced, it occupies so much of the anterior commissure of the vulva as to leave insufficient space for the proper introduction of the female blade.

How is this difficulty to be obviated? First pass in the male blade to its proper situation: having then determined what this is by the actual introduction, retract the blade by reversing the motion by which it was passed, till it is opposite the left ischium; then having it carefully supported by an assistant, introduce the female blade to its proper situation along the right sacro-iliac junction. This blade is still in front of the male blade; the male blade is now to be passed up to its original situation under the ramus of the left pubis; when if all is right, it will lock readily.

FORCEPS IN POSTERIOR POSITIONS.

What relation does the child's head hold to the forceps in the posterior positions of the occiput?

The sinciput then corresponds to the concave edges of the blades.

What rule have we for the direction of the handles in the posterior varieties? As the occipital extremity of the occipito-mental diameter is directed strongly backwards in these cases, it is necessary to depress the handles on the perinæum to secure the proper portion of the head within the blades.

FORCEPS IN TRANSVERSE POSITION OF THE HEAD.

Suppose the head present with the occiput to one ischium, should you correct the deviation by the vectis before you apply the forceps? Yes, if at all practicable.

Is it a rule in obstetrics not to apply the forceps with one blade under the arch of the pubes, and one over the perinæum or coccyx? It should never be done, if possible to avoid it.

Should we always attempt to correct the deviation by the vectis, or a blade of the forceps used as a single lever, before both blades are used for tractors in this kind of presentation? A persevering but judicious effort should be made for this purpose, in order, if possible, to prevent the necessity of applying them over the occiput and face.

Suppose you fail in all reasonable attempts to rotate the head into an oblique position? It would then seem necessary to apply the instruments either over the sides of the head in the sacro-pubal direction, or over the sinciput and occiput in the bis-ischiatic direction.

If you decide to attempt to apply the instrument to the side of the child's head, what should be the different steps of the process? If the occiput be towards the left ischium, although the left hand or male blade can be so inserted into the pelvis as to embrace the left side of the head from occiput to chin, yet the shank of the instrument will necessarily be carried so closely against the left tuber ischii, that it will be im-

possible for the right hand or female blade to cross it to lock properly. It therefore becomes necessary in most instances to adopt a course differing from that usually advised in regard to manipulation with the forceps, viz.: to introduce the female first on the pubal side of the head, and with the pubal curve of the blade directed towards the occiput, then taking the sacral edge of the male blade in the *right hand*, leaving the handle directed downwards, the tip of this blade is to be carried upon the sinciput first, then under the left parietal and temporal bones till it becomes placed parallel with the clam of the other blade, and the pivot comes accurately into the notch of the female blade which had been first introduced.

In the occipito right-iliac position, the male blade, if introduced first, usually presents its shank so strongly on the median line behind the pubis, that it is impossible to conduct the female blade in the right direction. It is therefore proper to withdraw the male blade gradually and cause its point, and part of the clam to rest upon the sinciput, and the left side of the vulva and vagina, while attention is paid to carrying in the female blade with the right hand by conveying it to the right side of the head. When this is satisfactorily accomplished, the handle may also be held by an assistant while the left hand blade is slided round to its proper position on the head under the arch, and the two branches brought into contact and locked.

What forceps is probably best adapted to these transverse or occipito-ischiatic positions? The "eclectic" forceps of Professor Hodge.

If you succeed in locking the forceps to your mind, would you at once turn the occiput to the pubic arch? It is never proper to force the occiput across the inclined plane unless the head has descended sufficiently low in the pelvis for the forehead to get directly below the promontory of the sacrum, after which the opera-

tion with the instrument should be in the direction of the curve of Carus.

FORCEPS IN MENTO-ANTERIOR CASES OF FACE PRESENTATION.

How should you operate with the forceps in cases of mento-anterior positions of face presentations? Apply the blades as in cases of occipito-anterior positions, and as the chin clears the anterior commissure, draw a little forward with the front part of the neck against the under part of the arch, then carry the handles rapidly over towards the abdomen of the mother, with a view to move the trachelo-bregmatic and the trachelo-occipital diameters like radii, between the arch of the pubes, the sacrum, coccyx, and the perinæum.

FORCEPS IN BREECH PRESENTATION.

What other presentations of the fetus may require the application of the forceps for the delivery of the head? Presentations of the pelvic extremity, in which after the delivery of the above, the head is retained.

How are you to dispose of the body of the child in such cases? In case the occiput is anterior the body is to be carefully lifted up over the abdomen of the mother and the forceps are to be introduced below; while in posterior positions of the occiput, the body is to be carried toward the sacrum of the mother, and the forceps are to be introduced above the body of the child.

Suppose the chin has departed from the axis of the pelvis, can you introduce and apply the forceps with benefit? They would be ineffectual in delivering the child, and subject the woman to much risk of injury.

Can you hope to deliver the head from the superior straits after the body has been delivered? Scarcely ever easily nor often safely.

What accident is liable to occur in cases of pelvic

presentation with the body delivered but the head retained, if you use great manual traction effort? Separating the body from the head.

Suppose you meet with a case in which the head is retained after the body has been pulled off, what should you do? First try to get the head in a proper position, then apply the forceps.

But suppose you cannot get it into the proper relation with the pelvis for the safe application of the forceps, what means are you to employ? Hooks, vectis, &c., so applied to the head as to get it in such position that the forceps can be applied, or that you can introduce such instruments as to enable you to diminish its capacity, and afterwards extract it.

DR. HODGE'S MODIFICATION OF FORCEPS.

What is Dr. Hodge's description and illustration of his valuable modification of the obstetric forceps? He says: The great object of the forceps is to extract the head of the fœtus from the mother's organs in suitable cases, without injury to the mother or child. It is notorious that injury to one or both parties frequently results, exciting a too well-founded dread of this instrument in the minds of females and even of physicians. Many causes contribute to this unfortunate result. No doubt much depends on the size, weight, and especially on the form of the instrument employed, a fact confirmed by the almost innumerable varieties which have been suggested. The instrument, as heretofore used, is evidently imperfect; and the one now suggested, is presented under the impression that, while it maintains all the excellencies of the former varieties, the injurious influences are partly, if not wholly, avoided. It is a modification of the long French forceps, but may be well termed an eclectic forceps, as combining as much as possible the peculiar excellencies of the English, German, and French varieties.

The advantages of the French or long forceps are,

I think, many and decided, as 1st. by them, any operation pertaining to this instrument, can be performed. There is no necessity to vary the form, structure, or size of the instrument, whatever may be the presentation of the head, its position or location.

2d. By them, sufficient power can be applied in cases of necessity, which cannot be done by the short forceps. Their leverage is greater.

3d. The narrowness of the blades which, without detracting from the utility of this instrument, will allow of their application to the sides of the head, even in oblique and transverse positions. Many of the modern English forceps are too broad to allow the proper manipulation of the instrument in the cavity of the pelvis. They cannot be introduced through the vulva without pain, especially in first labors. The French forceps can very generally be applied without pain.

4th. It may be added as another advantage, that as habit, in the use of an instrument, is all important, the practitioner will sooner become accustomed to a forceps which he can employ on all occasions than when he is obliged to vary it continually; especially when it is remembered that among the strong and well formed females of America, cases for the forceps are not very numerous, in the circle of any practitioner.

The disadvantages, which experience has taught me arise from the French forceps, are—

1st. Its unnecessary weight.

2d. The pelvic curve, in the variety most in use in this country, is not sufficiently great. Hence, when the head is high in the pelvis, the perinæum will be too much pressed upon, or else the blades will not be applied in the direction of the occipito-mental or oblique diameter.

3d. The divergence of the blades commencing at the joint, must necessarily distend to the vulva (especially its posterior margin) prematurely, and when the head is high up, gives pain, and endangers the laceration of the perinæum.

4th. The small size and kite-like shape of the fenestra prevents any portion of the cranium, even of the parietal protuberances, projecting into their openings: hence the hold on the head is less firm, and space is occupied by the blades, the thickness of which is added to the transverse diameter of the head.

5th. The flatness of the internal or cephalic surfaces of the blades—so that the margin of the fenestra often measuring three-eighths of an inch is much thicker than the external edge of the blade, increases the space occupied by the instrument. Hence, in cases of difficulty, where compression is employed, contusion or even wounding of the scalp results.

The mode of junction of the French forceps is decidedly inconvenient, when compared with the English, and especially with the German mode.

These disadvantages I have endeavored to obviate without diminishing or circumscribing the utility of this most valuable instrument, to which the profession and the public are so much indebted. My experience encourages the hope, that the attempt has been in a very great degree successful, so that even in inexperienced hands, the dangers of the forceps have been materially lessened.

1st. The weight of the instrument has been diminished from twenty ounces avoirdupois, to seventeen ounces.

2d. The pelvic curve has been slightly increased, so that the perinæum may not be dangerously pressed upon, when the blades are in the axis of the superior strait. To counteract any loss of power which may ensue from the increased curvature, there is an angular bend in the handles, in an opposite direction, that the direct line of traction may be preserved, a suggestion of our skilful and experienced instrument-maker, Mr. Rorer.

3d. The shanks, or commencement of the blades, are nearly parallel, diverging no more than is abso-

lutely necessary, until they approximate the head of the child, when a more rapid curvature than in the Levret forceps occurs.

4th. The proper blades of the instrument, from the shanks to the extremities, are nearly of the same breadth throughout, being equal to that of the extremity of the French forceps.

The advantages are a more secure hold of the head, and especially allowing larger fenestræ, so that the parietal protuberances may project into the openings and no space be occupied by the blades, when properly applied.

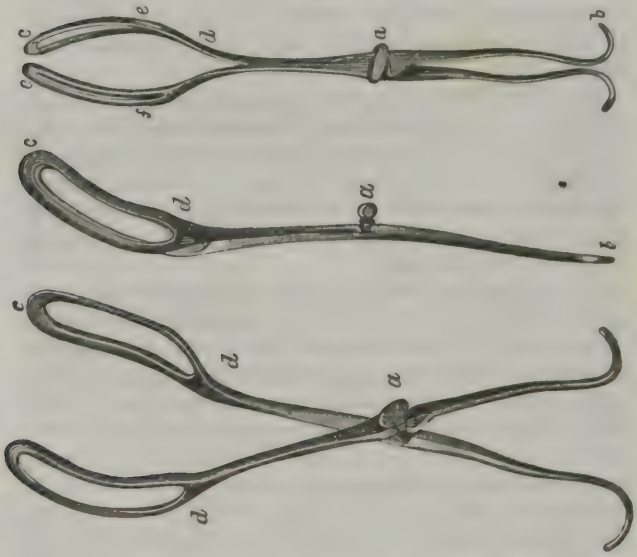
6th. The cephalic surface of the blade is concave, so as to be adapted to the convexity of the head, as suggested by Dr. Davis, in his improved forceps, hence no edges touch the scalp, and there is no wounding of the tissues, even when great compression is made.

7th. The very ingenious and scientific mode of locking the blades, as in the German or Siebold's forceps, by means of a conical pivot, and the corresponding oblique conical opening for its reception is adopted, by which all the facilities of the English junction are enjoyed, and the security and firmness of the French joints are maintained.

The eclectic forceps weigh one pound and one ounce, being nine ounces lighter than the French forceps, as usually manufactured by Rorer, of Philadelphia, and eleven ounces lighter than a specimen of Dubois' forceps in my possession, made in Paris. The whole length of the instrument, (see fig. 99) in a direct line from *b* to *c* is 16 inches; from the joint *a*, to the extremity *b*, the length of the handles, is 6.8; from *a* to *d*, the parallel shanks is 3.5; from *d* to *c*, the proper blades in a direct line, is 6 inches; from *c*, *c*, the extremities, to *e*, *f*, *f*, the greatest breadth, 3.7 inches. The separation between the points *c*, *c*, when the handles are in contact is .5 of an inch; from *e* to *f*, the greatest breadth when the han-

dles touch, is 2.5 ; when the separation at *e f* is 3.5, the points *e e* are separated 2 inches; the breadth of the blade is 1.8, slightly tapering to 1.7 near *c c*, the extremities. The breadth of the fenestra is 1.1 ; the thickness of the blade is .2 of an inch. The perpendicular elevation of the points *e e*, when the instrument is on a horizontal surface, is 3.4 inches, which indicates the degree of curvature of the blades. The elevation of the handles, near the joint above the same horizontal line, is 1.3, (including the thickness of the blades) which indicates the extent of the angular bend in the handles, (see fig. 99 and reference letters.)

Fig. 99.



Which forceps does Professor Meigs prefer ? In his valuable work on obstetrics, he says the most conve-

nient instrument he has ever employed, and the one he commonly makes use of, is that recommended by the late Professor Davis, of the London University.

DR. BOND'S REMARKS ON OBSTETRICAL FORCEPS.

What very sensible observations respecting the construction and mode of use of the forceps have been made by Dr. Henry Bond, of Philadelphia, and communicated by him first to the American Journal of the Medical Sciences in July, 1850? At an early period of my professional life it occurred to me that obstetrical cases are sometimes, although not very frequently, met with where the use of the forceps is clearly indicated, but where the instrument is found defective. I refer to those cases where, owing to the position or the form of the fetal head, and its relation to the pelvis, it is found impracticable to adapt the clams to the head so as to lock the branches, or to do so without violent injury to the mother or child. There is probably no obstetrician of large experience who could not furnish ample illustrations of this opinion, if he would give a full and faithful detail of his observations.

Systematic writers tell us that "we must feel the ear," or otherwise determine the precise situation of the head, and then the blades "must be placed exactly upon the *parallel* sides of the head, so that they may lock—if the handles do not readily join upon the introduction of the second blade—then we must, by *judicious management* of the one in fault, make it join its fellow." [This term *parallel*, as employed by some obstetrical writers, is not used correctly. There are no parallel sides of the head, but there are *symmetrical* sides or portions, using this term in its geometrical acceptation. The term *opposite* will not express their idea in this case, because the frons and occiput are opposite, but they are neither parallel nor symmetrical. The terms *similar* and *correspondent* may express the idea, but their import is more vague—less precise and

technical than symmetrical.] We are directed to withdraw the blade in fault and introduce it again, as if that would certainly accomplish that exact adaptation. When the head is above the brim of the pelvis, where the use of the forceps is sometimes clearly indicated and urgently demanded, it is an empty pretence that we can always determine the exact position of the head, and not less so, that "judicious management" will always enable us to adapt the blades exactly to symmetrical portions of the head so as to lock readily. Dr. Blundell says, "they (the long forceps in such cases) are more generally laid over the forehead and occiput." See also Velpeau, sect. 1061.

I will here present, very briefly, a few illustrative cases. 1. In the early part of my practice, I was called to a patient who was attacked with very violent puerperal convulsions. I requested a friend to come to my aid, bringing a forceps with him. We made repeated attempts to apply the instrument, and with a similar result—we could not lock the branches. We then summoned to our aid a gentleman of much experience and repute as a teacher of obstetrics. He introduced the blades, and he found them no nearer to an apposition, that admitted of locking, than we had done. But, as a professor must not be thwarted in the exercise of his own art, and, moreover, as the case was very urgent, with a strong hand *he made them lock*, and soon delivered the child; but the temporal artery was wounded, the cranium was fractured, and the child was not a long time dead.

2. In a case where the use of the forceps seemed to be indicated, and where the head was above the upper strait, I called to my aid a gentleman of eminent skill and great experience. We both attempted to apply the instrument, and with equal want of success. We could not adjust it so that the branches would lock, or that we could obtain any command of the head. The vectis was also tried without success. The case

was very urgent, and we were obliged to resort to *embryulcia*. This is the only instance in which this operation has been resorted to in a patient of mine, in a practice of thirty-three years. Owing to the disproportion between the dimensions of the head and the pelvis, it is, indeed, problematical whether the delivery could have been accomplished by means of the forceps, if it could have been adapted to the head, so as to lock; but it was very desirable to try the problem.

3. A few years ago I had a case, where, in consultation with a friend, it was deemed necessary to use the forceps. The head was above the upper strait, and I found it impossible to apply the instrument so as to lock the branches. I then made the female branch bear upon the pivot *without locking*, allowing the clams to be adapted to the head *obliquely* in their relation to each other; and using my hands as a lock, with much care to prevent slipping, I succeeded in safely delivering the child. If I had forced the branches to lock in this case, some violence must have been inflicted on the mother or child. This case, apparently so simple and devoid of striking incidents, was to me a very instructive one.

4. A case occurred recently in this city, as I have heard, where, owing to the difficulty or impossibility of properly adapting the forceps, the superciliary ridge was fractured and the eye destroyed. A similar case is mentioned in *Dewees' Midwifery*. These belong to that too numerous class of cases, the details of which are seldom allowed to escape the confines of the darkly shaded nursery.

Dr. Blundell very justly observes, "Unless the blades be elastic, absolute adaptation can (I conceive) never be obtained; for while the form of the instrument remains unchanged, that of the head itself varies. The lock should be loose, so as to admit of a junction of the blades, although they may not be brought into exact apposition with each other; for, in applying them to the head, this adaptation cannot al-

ways be obtained." For this reason, he says that Smellie's lock (made loose) is decidedly the best.

Dr. Meigs says, "If we fail to adjust the branches accurately in apposition, we either cannot make them lock, or we lock them in such a way that the edge of the instrument contuses, or even cuts the part of the scalp or cheek on which it rests, leaving a scar, or actually breaking the tender bones of the cranium, while the other edge cuts the womb or vagina by its free projecting edge. In fact, the forceps is designed for the sides of the head; and if, under the stress of circumstances, we are compelled to fix them in any other position, (an incident not very unfrequent,) we shall always feel reluctant to do so, and look forward with painful anxiety to the birth, in order to learn whether we have done the mischief we feared, but which we could not avoid."

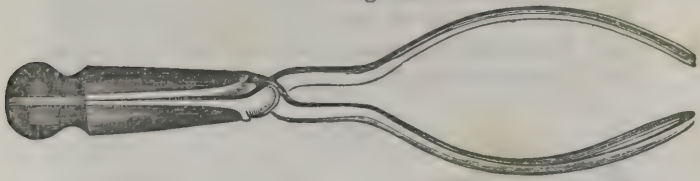
"The difficulty and the danger in such cases evidently arise, to a great extent, from the want of an accommodating, rocking motion of the branches of the forceps upon each other, such as will allow the depressed ("cutting and contusing") edge to rise, and the elevated edge to sink and come in contact and apposition with the head; that is, so that the blades may be adapted to the head by varying from their usual relation to each other.

[See "*Obetstrics*," the science and the art, for excellent lessons and much information on the use of the forceps. I commend attention to the author's emphatic inculcation of the idea, that the *forceps is the child's instrument.*]

None of the French forceps, or their numerous modifications, so far as I know, are intended to admit of such a motion. When locked, they are truly locked; and whatever be the form of the head, or whatever the parts of the head to which the instrument is applied, the head must conform to the forceps and not the forceps to the head. Smellie's joint (which can hardly be called a lock) will admit of some motion,

if made loose, as recommended by Dr. Blundell; but this motion is very limited and unregulated. Dr. Davis, of London, has adopted Smellie's joint, (fig. 100) but without observing Dr. Blundell's precaution as to its looseness.

Fig. 100.



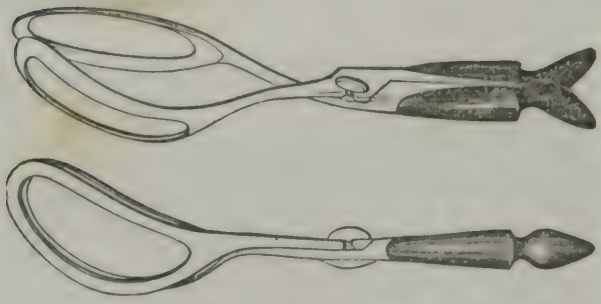
The lock of Dr. Siebold's forceps, when the pivot is partly unscrewed, will admit of the lateral motion of one branch upon the other, to a very considerable extent. The branches of forceps are two levers of the first kind, the pivot being the common fulcrum of each. It is to be observed in Siebold's forceps, that the branches are so much curved—make so wide a sweep—that the fulcrum is far removed from the direct line between the power (the hand) and the weight (the head); and it will be seen on examination that this circumstance will render their lateral or rocking motion nearly useless, if not dangerous. Indeed, I should infer, from the structure of the joint and the form of the blades, that the use of this motion was never contemplated by the inventor.

A forceps was exhibited to the profession in this city, several years ago, devised with a view to supply a rocking, accommodating motion. It was constructed with *a swivel joint in each shank*, allowing motion to a limited extent. The objections to it were, 1st. That this joint rendered the blade very weak, and that it would almost unavoidably become corroded with rust. 2d. That the operator had no control over the motion of it; it would rock or wabble always, whereas the

rocking motion is not commonly requisite. This unrestricted motion, together with the form of the blades, would render this instrument very liable to slipping or displacement. I have forgotten the name of the inventor, and I am not aware that there is a specimen of the invention in this city.

In the instrument (from the manufactory of Messrs. John Rorer & Sons, of Philadelphia, made of German steel, and spring-tempered,) which is illustrated in fig. 101, I have attempted to supply what has seemed to

Fig. 101.



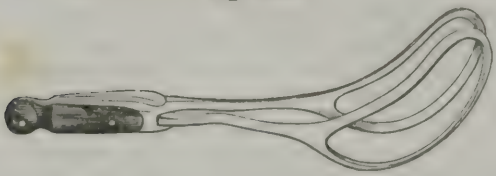
me an obvious *desideratum*, viz., *to give the branches of the forceps an accommodating rocking motion upon each other, the extent of which can be regulated at will, and which shall in no respect lessen the power of the instrument.* The mechanism devised to obtain this motion is very simple, not liable to derangement, and it may be adopted in the construction of forceps of other forms than that here presented; provided that the pelvic curvature of the branches does not take such a wide sweep, as to throw the pivot far out of the direct line between the handle and the centre of the fenestræ. [There being some vagueness and discrepancy in the use of the terms employed in describing the obstetrical forceps, I here offer some ex-

planatory remarks. These may be entirely superfluous to many readers, but perhaps not so to all. A forceps consists of two *branches* (*brachia*) and a *pivot* or *fulcrum* (that is, in such forceps as have their branches connected by a pivot). A branch consists of the *handle* (*manubrium*), which extends to the joint (*junctura*), and of the *blade* (*cochleare*), which extends from the joint to the remote point. The blade consists of the *clam* (*cochlea*), which is that concave portion of it intended to embrace the head, and the *shank* (*femur*), that portion between the joint and the clam. This division of the blade into shank and clam is not recognized by Mulder, but it has become very convenient if not absolutely necessary. The two parts of the clam, on the side of the opening or *fenestra*, are sometimes called the *limbs* of the blade, viz., the *upper* limb, and the *under* or *outer* limb. The pivot consists of the *thumb piece*, the *screw*, and the intermediate *bearing point* or *fulcrum*. When the branches are connected by a pivot, they are usually designated as the *male* and the *female branches;* that which has the notch for the reception of the pivot, being the *female*, and the other the *male* branch. Dr. Velpeau designates the two branches as *the right and the left*, from the *position of the handles* as held in the hand of the operator. It seems to me more appropriate to designate them from *the position of the blades*, these being the more essential parts of the instrument, and the attention, in an operation, being directed more to the position of the blades than to that of the handles. Otherwise the blades seem to be playing at cross-purposes—the right blade being on the left, and the left on the right. I am aware that it may be said, in support of that usage, that the branches are named right and left, in reference to the pelvis of the patient. For the same reason, when riding backwards in a coach, a man's right hand becomes his left. As one curve of the forceps is made in reference to the form of the head, and the other to that of the pelvis, it seems to

me more distinctive and suggestive to name them respectively *the cranial* and *the pelvic curvatures*, than the *old* and the *new* curvatures. This was *new* in the time of Levret, but it has ceased to be so; and we do not derogate from the credit of the inventor of that important improvement by giving it an expressive term.]

The instrument will be seen to differ, as a whole, from any now in use; although no one of its modifications, except the lock, has any claim to novelty. The handles are Dr. Siebold's, with unimportant modifications. The blades are a little modified, from Dr. Davis's, shown in fig. 102 on a small scale. Its whole

Fig. 102.



length is about fifteen inches, and its weight about fifteen ounces. The length of the handle is six inches, and that of the blade nine inches. It might be made somewhat shorter and lighter without impairing its power.

Of the Lock.—In fig. 103, the *screw* is of about double the diameter and nearly double the length of those in other instruments. This *additional strength* is necessary, because the bearing point of the pivot is not immediately above the blade in which it is inserted (as in other instruments), especially when this bearing point is elevated so as to give the blades a free rocking motion. The *additional length* is required to give the screw a firm lodgment, when it is partly withdrawn from the blade. The *thumb-piece* is made to fit so

Fig. 103.



close upon the female blade, but without resting upon it, and is so thick and rounded, that there may be no risk of injury should it ever happen to be brought into contact with the patient. The screw, when well made, will turn so easily that the thumb-piece may be made much less prominent than it is here represented. When the forceps is used, the thumb-piece should be placed *parallel with the blades;* otherwise it may interfere with the rocking motion. Between the thumb-piece and the screw, the pivot is of the form of two *frusta* of cones of equal dimensions, united together at their smaller diameters, forming an obtuse angle or groove at their junction. The base of that cone joined to the screw projects a little, forming a shoulder, intended to limit the motion of the screw into the blade.

The notch in the female blade, made to receive the pivot, is so deep that the pivot, in relation to the edges of the branch, is nearly in the middle; yet the width of this branch, opposite to it, is swelled out, so as to give it adequate firmness. The width and the form of the *sides* of the notch are accurately adapted to those of the pivot, and the *bottom* of the notch terminates in an edge, like the knife-edge of a balance, which is intended to rest in, and bear upon, the angle or groove in the pivot. On the under side of the male blade is seen a protuberance, finished so as to present no salient points. It is a shield for the extra length of the screw. When the pivot is screwed entirely down, the branches have no more lateral or rocking motion than those of any other forceps, and, in this condition, they will very generally be used. But by turning the screw, so as to elevate the bearing point, more or less freedom is given to the rocking motion, according to its elevation; and this motion is effectually restricted within any desired limits. When, by means of this free motion, the operator has been enabled to grasp the head, he may sometimes change its position, so that the clams may be then adapted to the head, without the obliquity at first

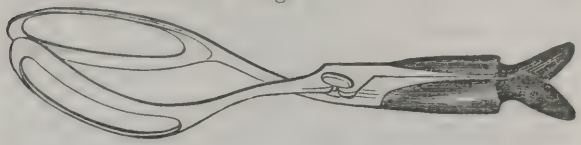
necessarily allowed to them by the elevation of the pivot: and then, if desirable, the pivot may be screwed down, and the blades will become as fixed as those of other forceps.

Two objects seem to have been kept more or less in view by the various modelers of the obstetrical forceps. One of these objects has been *efficiency*, having reference chiefly to the certainty of accomplishing the delivery. Of this sort is the long heavy French forceps, and to some extent its several modifications. It is undoubtedly a powerful, but dangerous instrument. The narrowness of the blades allows them to be introduced with comparative ease to the operator, and then (with such powerful levers, as their long handles) also to be locked with apparent ease, without being adapted to the head. They must be efficient in the hands of a bold operator in effecting "a triumph of the art," but, like other victories, too often attended with havoc. [See Blundell's "Obstetric Medicine," part ii., chap. viii., sec. 3, last paragraph.] The other of these objects has been *safety*, especially for the child. Dr. Davis, of London, seems to me to have had this object especially in view in modeling his forceps, and to have been so engrossed with it that he has not had a due regard to efficiency. Such blades as his, in awkward, inexperienced hands, and, indeed, in any hands, are probably less easily introduced so as to be locked than the French forceps; because, for the purpose of locking, they require a more exact adaptation; but when applied they are much safer—there will be much less probability of injuring the child. The French forceps have received several successive modifications in this country, which add much to their safety and convenience. Indeed, some accoucheurs extol some of these modifications as the *ne plus ultra* and almost the *sine qua non* of obstetrical instrumentality.

It will be seen that the *blades* of those here presented (fig. 104,) resemble nearly those of

Dr. Davis. The shanks are considerably longer; the clams are not quite so long; the radius of their

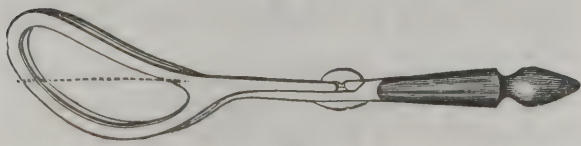
Fig. 104.



pelvic curvature is a little less, especially that of the outer limbs, so that it will be less liable to be obstructed by the promontory of the sacrum, in passing the instrument above the superior strait. The fenestræ are wider in their middle and posterior part than those in most other forceps now in use. When the pivot is elevated, so as to allow the blades their rocking motion, this width becomes especially requisite in order to secure a firm hold on the head, and to avoid the risk of their slipping sideways. The space between the blades is such, that, when applied to the head, the handles shall not be at a distance from each other, awkward and inconvenient to the operator. From the pivot, the upper line of the shank continues forward, without any elevation or depression to the beginning of the pelvic curvature; and the form and the relation of the shank to the clam are intended to be such as to interfere the least with the perinæum.

While a form has been selected, which, it is believed, will admit of application easy and safe for the mother and child, and grasp the head above the su-

Fig. 105.



perior strait, it will be seen (fig. 105.) that the pivot is in a direct line between the handles and the centre of the fenestræ. This is a *point of importance* in those cases where the rocking motion of the blade may be required, as it will cause each limb of the clams to press with nearly equal force, thus avoiding undue pressure upon any one part of the head, and the liability to slipping or displacement.

The *handles* are made partly of ebony, and they resemble those of Siebold, although considerably lighter. The precise model, of those represented in the illustration, is not important; for it may be varied to suit the grip or the taste of different operators. The objects aimed at in their construction should be, *first*, such a length, compared with that of the whole instrument, as to give a sufficiently firm hold and pressure upon the head, without inflicting a dangerous compression; and, *secondly*, such a form as to allow them to be easily grasped in the hand of the operator, with the full assurance that he has the best command of the instrument, without the danger of slipping, and without the necessity of a napkin envelope. These qualities do not belong to the long polished steel handles, which are heavy, upon which the wet, oiled hand of the operator must slip, and which even when encumbered with a napkin, must convey an uncomfortable sensation of misgiving. Ask the lithotomist or amputator how he would like to have his instruments finished with such handles that he would be obliged to grasp them wrapped in a napkin? One prominent objection, if not the chief one, to Dr. Davis's forceps, is the shortness of the handles and their uncomfortable grip, except in a hand inconveniently large for an accoucheur. They cannot, however, slip in the hand, like those of polished steel.

The attempts to combine several other instruments in the handles of the forceps, I regard as, generally, worse than useless. With the long polished

steel handle may be combined an efficient blunt hook. But with such a heavy, mis-shapen handle, the operator would be much more liable to injure the mother or child than with a well-constructed blunt hook. I refrain from any criticism upon such useless perforators and dangerous crotchets as I have seen combined with forceps. It is sufficient for an instrument, so important as the forceps, that it is exactly fitted for the performance of its appropriate uses. In skilful hands it will preclude the demand for the perforator or the crotchet, except in very rare cases; and in these terrible cases, truly of life and death, the operator ought not to be satisfied with instruments which are but ill-contrived *succedanea*.

I am aware that the first impression of some persons, upon looking at the illustrations, will be, that the instrument is too strait, that the pelvic curvature ought to be continued into the shanks. If the whole operation, or the most difficult and important part of it, consisted in passing the blades above the superior strait, narrow blades, with a curve of a wider sweep, like those of Professor Siebold, slipping in probably with rather more facility, would be preferable. But as those here represented can be passed above the superior strait with facility, it seems to me that what I have already said upon the importance, in many cases, of having the pivot in nearly a direct line between the handles and the fenestra, furnishes a valid reason for adopting a model not differing essentially from that here presented.

Others may object, that unskilful and incautious persons will be tempted to carelessness in applying such a forceps, and to avail themselves of the free motion of its lock unnecessarily. Professors of obstetrics, if they deign to notice it, ought to give their pupils the proper directions and precautions in the use of this instrument, as they do in that of others. Some persons are, indeed, so unhandy in the use of any instrument or tool, that all the professors in the

land cannot give them such tact and dexterity, that they ought to be allowed to approach the puerperal bed. Should this instrument happen to fall into such hands, the danger to either mother or child would probably be much less than from the use of powerful, unaccommodating forceps, misapplied by such hands.

Others may object that it is an innovation, a gimcrack novelty—for they are *the conservatives*, scrupulously maintaining the ancient landmarks. It differs from the one extolled by their venerated preceptor, the one to which they have been accustomed, and in the use of which experience has given them expertness. Long companionship produces partiality, and perhaps some little modification of their own may have given them the feelings of paternity. It has answered their purpose, for with it they have accomplished delivery safely; and if, in some instances, they have wounded the integuments or fractured the cranium; or if they have been compelled to resort to the perforator, in cases where the forceps was indicated, they will console themselves with the reflection that it was an inevitable destiny—a fault of nature, and not a defect of art.

In conclusion, I must observe that I am by no means pertinacious for the precise model of the instrument presented in the illustration; for it is not improbable that experience may suggest modifications of it, which will improve its adaptability, and yet retain its essential principles. All I ask is, a careful and candid examination of those principles.

LABOR COMPLICATED BY DISTORTION OF THE PELVIS.

What diseases often result in distortion of the pelvis? Rachitis, or mollitis osseum.

What varieties of form do pelves assume from rickets or softening of the bones? Nearly every conceivable variety, as may be seen by diagrams taken from actual specimens collected both in Europe and this coun-

try. Thus, while fig. 106 gives a faithful representation

Fig. 106.



of well arranged iliac fossæ and a superior strait of standard dimensions; and fig. 107 exhibits the normal

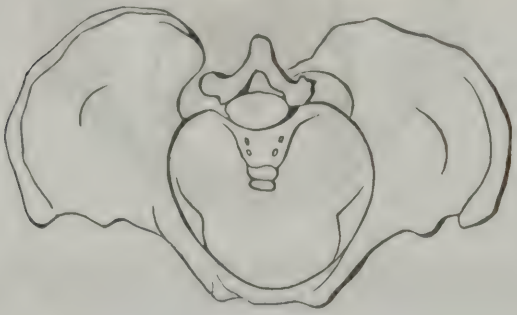
Fig. 107.



proportions of the inferior strait of a well-formed pelvis, the departures from this standard are very variable, partly in consequence of the manner in which the rickets or mollities have affected the different portions of bone constituting the pelvic canal, and partly also in consequence of the position in which the patient had been during the confinement necessary in

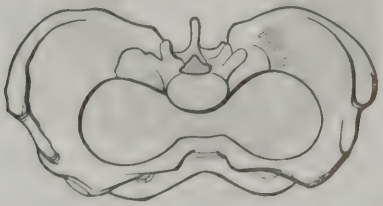
some cases, while the bones were in a merely gelatinous state, it may be observed, that the antero-posterior diameter of the superior strait is sometimes elongated, so as to give the inlet an oblong appearance as in fig. 108; while on the contrary, the sacro-pubal dia-

Fig. 108.



meter is so much abbreviated as to give the entrance to the canal the resemblance of the numeral 8, placed transversely, as shown in fig. 109, in which, as will be

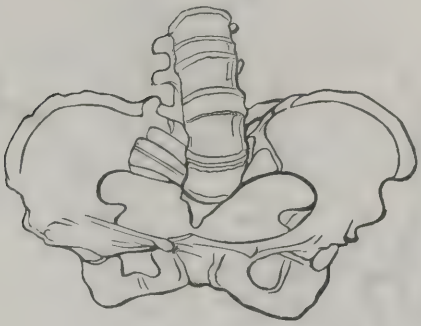
Fig. 109.



easily seen, the antero-posterior diameter, though strictly on the median line of the body, is very much shortened, while the ilia are so widely separated as to make the transverse mensuration abnormally long, the oblique diameters measuring nearly or quite the usual length. Besides this a less regular form is

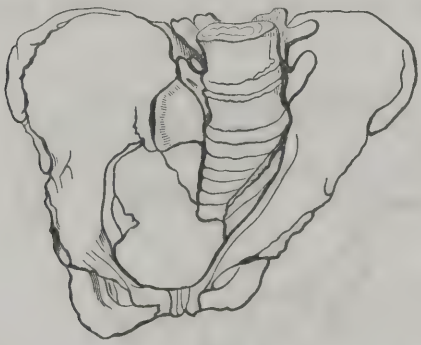
shown in fig. 110, while a considerable lateral dis-

Fig. 110.



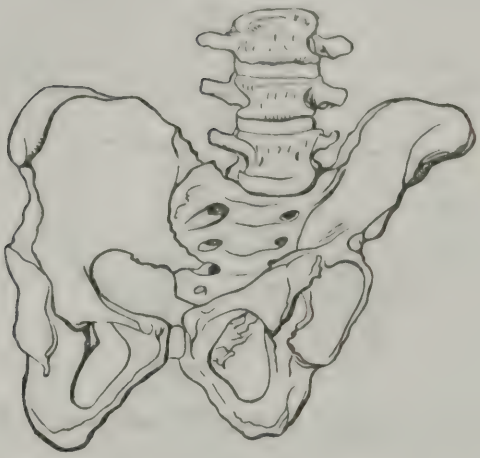
tortion is exhibited in fig. 111, and a still greater

Fig. 111.



one is represented in fig. 112, in which it may be observed, that the antero-posterior diameter, starting from the middle of the promontory, will fall not on the pubes but over the left acetabulum; and that while the right oblique diameter is nearly or quite normal, the left one is greatly abridged. At the

Fig. 112.



same time can be seen in fig. 113, that variety of

Fig. 113.



distortion, dependent apparently upon equal softening of the pubic bones, and their approximation by the resistance made by the femora to the superincumbent weight of the trunk.

Why do the distortions usually take place in the direction of the sacro-pubal diameter? From the fact that the pressure is made in that direction by the superincumbent weight of the spine or body.

What is the smallest size in diameter through which a living child can be delivered if arrived at term? Three inches.

If less than this, is it proper for the accoucheur to wait for the effects of the natural powers? It is not, because all the efforts of the womb and the woman would be ineffectual.

MODE OF MEASURING THE DISTORTIONS.

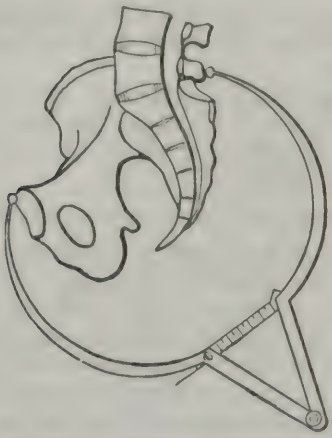
What methods have been proposed for ascertaining deformity of the pelvis? Very many modes of ascertaining the mensuration of the pelvis, by instruments intended to be applied externally or internally, or both. Hence we have the pelvimeter of Baudelocque, of Coutouly, of Stein, of Stark, of Simeon, of Boivin, and others, for ascertaining by various modes of application, the dimensions of certain portions of the pelvis.

What is the pelvimeter, or calliper of Baudelocque? His compas d'épaisseur, or calliper is contrived with a bulb at the upper ends of the instrument with a graduated scale near the middle of each limb, and is so constructed, that when the limbs are separated from each other, the scale will indicate the degree of the expansion, and consequently indicate the dimension of the body embraced within the points when applied to the mensuration of it.

How is the instrument to be used? One of the bulbs is to be brought as nearly as possible in contact with the symphysis pubes, and the other to the tip of the first spinous process; observe the intervening space upon the scale, and you thus obtain the external measurement of the sacro-pubal diameter of the exterior of the pelvis. By deducting two and a half inches for the usual thickness of the base of the sacrum, and half an inch for the thickness of the pubes, the

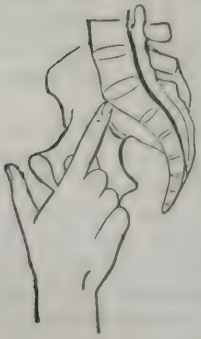
remainder will indicate nearly or quite the sacro-pubal interspace, (see fig. 114.)

Fig. 114.



What in practice has been found more convenient and reliable than any of the various instrumental pelvimeters? The index finger of the accoucheur, carried with its radial edge against the curve of the pelvic arch towards the promontory of the sacrum, as shown in fig. 115.

Fig. 115.



If he cannot reach the sacro-vertebral angle by this means short of carrying the entire hand within the vulva, need he entertain any apprehension of want of space for the head to pass in this direction? Under such circumstances he will have nothing to fear in this respect, but if the point of his finger

should reach the promontory, and the nail of the index finger of the other hand be applied upon it at the point of contact with the pubic arch, and the finger be withdrawn, the measurement of the inter-space can be sufficiently accurately ascertained.

Is it expedient to carry the hand into the vulva unless the woman be in labor, and indeed have at the time a pain? It must rarely if ever happen that there will be occasion for doing more than to introduce the index to the commissure, or perhaps the index associated with the middle finger may be carried as far as the commissure between it and the next, which should be kept in a state of flexion in all cases of examination unless when the patient is in labor.

What are Dr. Meigs' remarks on this digital means of measurement? He says, as a general rule, the indicator finger of the accoucheur will scarcely be found capable of extending further than three and a quarter or three and a half inches beyond the crown of the pubal arch. It is true, that by the introduction of half the hand, the palp of the indicator finger can be made to explore a region of four and a half inches distant from the crown of the arch; but, as the introduction of half the hand in the woman not in labor, or affected only with the earliest signs of labor, is so painful as to excite the greatest repugnance and resistance on the part of the patient, the vaginal taxis is generally preferred with the indicator alone.

MODE OF DELIVERY IN CASES OF PELVIC DISTORTION.

What resources has the practitioner in such cases of distortion of the pelvis as do not allow the child of full size to pass through it? Premature delivery, artificially induced, or craniotomy, or the cesarean section, *i. e.*, gastro-hysterotomy.

What is afforded by the perforation of the cranium, and the breaking up of the pulpy mass? An opportunity for the vault of the cranium to collapse, and pass down more readily.

What are the diameters of the base of the skull after the vault has been removed? The face measures one and a half inches; two inches with the lower jaw. The transverse diameter of the base of the cranium is two and a half inches.

What is the operation of diminishing the size of the child's head called? Craniotomy, cephalotomy, and embryotomy.

CRANIOTOMY.

What instruments are used for the purpose of opening the head? A simple trocar, which is capable of making an orifice of capacity equal only to the circumference of its cutting surface, as shown in fig. 116;

Fig. 116.



a scissors, as devised by Smellie with edges about one inch long, cutting outwardly, which, when the two blades are brought together resemble a trochar cleft in the direction of its long axis; a scissors with double cutting edges, and slightly curved on one of its lateral surfaces, as contrived by Dr. D. D. Davis; a scissors curved on one of its edges, with one point longer than the other, as modified by Dr. Hodge, and specimen given in

Fig. 117.



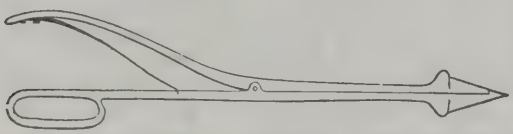
What advantage are the scissors of Smellie supposed to afford over the simple trocar, for perforating

the cranium? Their capability furnished the operator in making a larger opening by separating the blades of the scissors.

Is it always easy to open the blades of such scissors by a single hand? The scalp, inter-cranial membranes, and the margins of the bones, sometimes oppose the expansion of the blades of these scissors by the extensor muscles of one hand only, which therefore requires the combined force of two hands and abducting muscles of both arms to accomplish this object. The scissors devised by Dr. Hodge are an exception to this objection, because after perforating they cut in the opposite direction.

What are some of the contrivances which have been proposed to obviate this difficulty in attempting to increase the opening from a point to a long slit? There have been several modifications of the original trocar, or perce-crâne, divided like Smellie's scissors, but so constructed as to be opened by the flexor muscles of the hand, one by a German accoucheur, one by Dr. J. L. Ludlow, of Philadelphia, and one by Mr. Holmes, of England. Ludlow's instrument is shown in

Fig. 118.

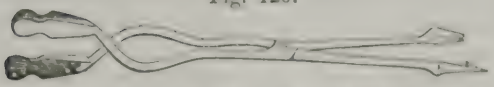


What is the general description of Holmes' perforator? When the two handles are most widely separated, the two sections of the cutting blades are in contact, and represent a partially cleft perce-crâne, as shown by a section of the instrument in fig. 119. In proportion as the handles are made to approach each other, (as shown in fig. 120,) these blades are

Fig. 119.

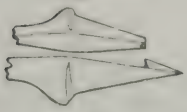


Fig. 120.



separated as scissors with their edges reversed for cutting from within outwards. The large section (fig. 121) in which the blades have been partially separated as if by compression upon the handles, shows the manner in which the lateral section of one of the blades has been arranged to fortify the closed instrument when used as a borer to perforate a firm scull, and to prevent the vibration of the two halves of the instrument upon each other as occurs in Smellie's scissors while used in that process; in one side of this lateral section is a conical groove into which a conical projection from the other blade is made to fit accurately when the instrument is closed by the wide separation of the handles, which are to be kept thus abducted by the commissure of the thumb and fingers being applied at the crossing of the stems of the handles, while the point of the instrument is carried up, guarded by the fingers of the other hand to the part of the head to be perforated. The instant the perforation has been effected by such rotary motion of the instrument as may be necessary, the hand is to be slided from the stems to grasp the handles, and adducting them by the flexor muscles, the blades are separated partially, or to the fullest extent as may be desired or as may be practicable. It may be observed that the point and blades of Dr. Ludlow's modification of the German instrument operate in a similar manner with that just described.

Fig. 121.



How is the uterus to be supported for the operation? It must be supported by one or both hands of an assistant.

HOW TO USE THE INSTRUMENT.

Suppose the head, &c., be properly supported by the hands of an assistant over the abdomen, how is the operator to proceed to the introduction of the instrument? The point of the perforator, or scissors, is to be well guarded by one hand which is to be introduced to the proper part of the head.

How is he to operate with it? Fix it, if possible, in a suture or fontanelle, push it up to the shoulders of the blades if he use the scissors; then open the handles and cut from within outwards, then turn the edges in another direction, and cut again till he has made a considerable opening.

When you have perforated to the cranium sufficiently, how are you to break up the membranes and the pulpy mass of the brain? Pass the scissors, or some other convenient instrument and rotate it freely within the cranium, at the same time scoop out the mass thus broken up by it.

HOW TO AID THE COLLAPSE OF THE CRANIAL VAULT.

If the head do not readily collapse, what means of assistance have you? The application of the forceps has been proposed, and in some cases used with success, to assist in compressing the cranial bones when they have not readily been moulded to the form of the pelvic canal.

VECTIS IN THESE CASES.

Could you ever use the vectis to advantage in cases in which the head has been perforated? It may sometimes be used with benefit to change the direction of the head, or to assist in traction.

What modification of vectis did Dr. D. D. Davis make for this purpose? He caused a number of sharp points or teeth to be set on the extremity of the concave surface and nearly at right angles with it, for the purpose of securing a firm hold on the part of the

scalp or cranial bone to which it was applied, when used either as a lever or tractor.

What is the value of this modification in practice? Such an instrument could rarely be useful, as it would at least be attended with embarrassment should the teeth become fastened in the scalp or bone while the head was high up, or pressed against the wall of the pelvis.

CROTCHET—HOW USED.

What other and common means have you to act as a tractor? An instrument called the crotchet, or sharp hook.

How is this instrument to be applied? It is to be passed through the artificial opening in the head, and fixed upon some firm point within the cranium. It is however a dangerous instrument, and never to be used when it can be avoided.

How are you to guard it when introduced? By the finger applied against some other part of the head to prevent any accident from slipping.

Are crotchets ever guarded by a blade opposed to them? They are; and it is unsafe to use one without a proper guard of this kind. See fig. 122.

Fig. 122.



HOW TO REMOVE THE CRANIAL BONES.

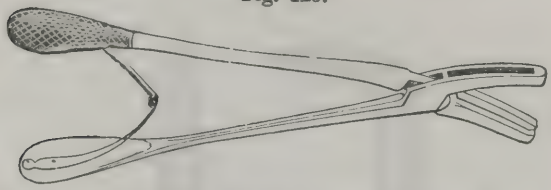
Suppose there is not room for the bones to pass down even after the brain is evacuated, what then is to be done? Pick, or tear, or cut away the different portions of the vault of the cranium.

In the use of instruments for this purpose, should

you have regard to the scalp? Yes; it is important not to cut it away with the bones, but preserve it as a guard to the soft parts of the mother.

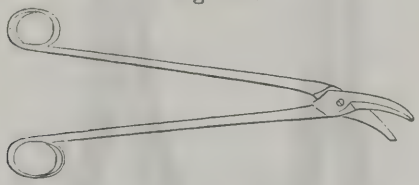
What instrument would you use for cutting up the bones of the cranium? The craniotomist of Professor Davis of London, (fig. 123) of which the spring between the handles has been added by Dr. Warring-

Fig. 123.



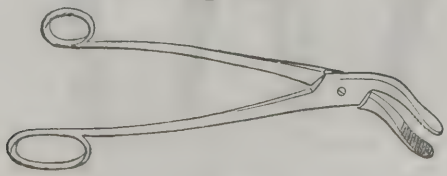
ton; or the curved scissors of Professor Hodge of Philadelphia, (fig. 124).

Fig. 124.



Suppose the space is too small for you to operate with the craniotomist, what could you substitute for it? The old-fashioned duck-bill forceps of the German surgeon-accoucheurs, shown in fig. 125; or

Fig. 125.



the straight and curved craniotomy forceps, devised by Dr. Meigs, in 1831, on the occasion of his being obliged to pick away the cranial bones of the child of Mrs. R., whose case is amply detailed in his work on obstetrics, (page 570, edition of 1852,) and upon whom the cesarean section has since been twice successfully performed.

Fig. 126.



OPERATE DELIBERATELY.

When this difficult operation has been decided upon, is it necessary for you to complete it at once? Generally the operator may take his time at it, work at it till he is weary, then give his patient an anodyne, rest her and himself, and afterwards resume the task.

Through what sized aperture can you bring down the base of the cranium? One that is from one and a quarter to one and a half inches antero-posteriorly, and from two and a half to three inches transversely.

Is the operation of cephalotomy dangerous to the mother? Not in common cases, if performed in time and with proper care.

Is her situation hazarded by the necessity of breaking up the vault of the cranium? It is, unless great care is taken to adjust the instrument safely.

Suppose the body will not pass through the deformed canal? It must then be mutilated.

Should you make up your mind in the early part of labor, in what manner you will complete the delivery? It is proper that you make a careful examination for that purpose.

TRY FORCEPS FIRST IF POSSIBLE.

Suppose the pelvis be rather smaller than the standard size, what should be done when labor takes place? Clear the bowels and the bladder, promote relaxation of the soft parts—make a careful examination of the internal capacity of the pelvis—and if it be regular and not very small, some hope may be entertained that the child may be extracted without being previously mutilated.

If the blades of the forceps could be introduced, do you think it prudent to try the use of them? Yes—in all cases in which the capacity of the pelvis will admit of the application of forceps, it will be best to make compression and traction by means of them.

Suppose you had applied the forceps, and found

you could not deliver with them, how should you do? Open the head while the forceps are still on, then compress the bones with these instruments, and renew the attempt to deliver.

Suppose the size of the pelvis be so small that you cannot introduce the forceps, what should you do? Diminish the size of the child's head, and then apply the crotchet or the craniotomy forceps.

What instrument have you to diminish the size of the child's head in utero, besides that of the perforator or ordinary forceps? The crushing forceps, brise-tête or cephalotribe of A. C. Baudelocque.

Would you be disposed to use this instrument? It is so large and cumbrous an instrument, that we think it could not be used without great hazard to the patient, though it is said to have been successfully employed in some cases in Paris.

Is it probably not susceptible of some reduction of its size, and thus be better adapted to use? Under direction of Professor Hodge, the instrument has been much reduced in size, by Mr. John Rorer and Sons, without material loss of power, and has several times been used in Philadelphia in bringing heads through the pelvis, after protracted attempts with well made forceps had failed.

DR. HODGE'S COMPRESSORES CRANII.

What appears to be the reason which led Professor Hodge to modify, improve, and render practical the heavy and otherwise inconvenient Brise tête of A. C. Baudelocque? He says, I was called in 18— to assist in consultation, at the delivery of a young woman with her first child, who had been in labor for five days. After three days, the pains had entirely subsided, and could not be re-excited even by large doses of the secale cornutum.

The presentation was the head at the superior strait, but what part could not be exactly recognized. A strong pair of Baudelocque's forceps was applied

at the sides of the pelvis, and moderate tractive efforts soon convinced me that the head was too firmly "locked" to be moved. I was unwilling to abandon the firm hold on the head by the forceps, and determined therefore to puncture the head without removing the instrument. This being accomplished, strong compression was made by the fillet to the handles of the forceps, and in a short time the head descended, and was delivered without difficulty—transversely, the face to the right tuber ischii, the occiput to the left, so great was the diminution of the occipito-frontal diameter by the blades passed over the two extremities of the head. The success of the operation, the short time occupied, the comparative facility of execution compared with the usual operation by means of crotchets and craniotomy forceps, determined me to repeat the experiment. On several minor occasions it answered. In 1842 a more serious case occurred in a woman with a contracted pelvis, measuring three inches in the antero-posterior diameter of the superior strait, to Dr. Warrington, who politely requested my assistance. Dr. W. opened the head and applied the forceps. The instrument was not sufficiently powerful immediately to effect our purpose. Fortunately, however, by continued pressure, the left parietal bone collapsed, when delivery was safely and easily accomplished.

The superiority of this mode of delivery was to me sufficiently evident, and having heard of the "brise-tête" of Baudelocque, Jun., I procured a specimen from Paris, which proved to be so very large, heavy, and awkward, that I did not venture to use it. Reflection on the dangers of the usual mode of delivery by tractors, after craniotomy, and on those by compression, so perfectly satisfied me, that the latter were far less, in every respect, determined me to have a strong pair of forceps made for effectually crushing the head of the child, so as to relieve the tissues of the mother as much as possible, from the effects of

pressure, in these unfortunate cases, and yet small enough to be readily and safely used by any one accustomed to the use of the common long forceps at the superior strait.

Our excellent obstetric instrument-maker, Mr. Rorer, No. 24 North Sixth street, has successfully carried out my ideas in the manufacture of a pair of strong forceps on the model of Baudelocque's "brise tête." Experiments on dead infants, first made after delivery, and subsequently before delivery, evince the facility and safety of its employment, and also, that it has sufficient power.

Although much heavier than the common forceps for the purpose of strength, yet the "compressores cranii" are of much easier application, as their dimensions are smaller and the blades may be passed up in any direction where there is most room—it being indifferent to what part of the head they are applied. The action of the instrument is two-fold—first, to *compress*, and thus break up the cranium and reduce its diameters, if needs be, to two inches, which experience shows may be done without any danger of the crushed fragments of the cranium dividing the scalp of the child and penetrating the soft parts of the mother. They fall inward. Second, They operate as "*tractors*" in the same manner as the common forceps; care being taken to deliver slowly, that no undue or irregular pressure be made on the perinæum, rectum, vulva, &c.

The general appearance of the compressores cranii resembles the French long forceps with the double curve; each curve being somewhat modified. The pelvic curve is less, allowing more strength to the instrument. The cephalic curve is modified on the same principle as that of the "eclectic forceps," (quod vide) so that when the handles are in contact, an oval space exists between the blades, six inches and five tenths long, the greatest breadth being at a point three inches and three quarters from the extremity

and but two inches and three quarters from the commencement of the cephalic curve nearest the joint of the instrument, corresponding to the oval form of the head, and having the mechanical effect of forcing the head, as it is diminished in size, more and more into the grasp of the blades. The blades are solid for strength; fenestra are not here wanted. They measure 6.5 inches in length; their greatest breadth is 1.5 inch, at an inch from their termination, very gradually diminishing towards the lower portion near the joint; and .25 of an inch in thickness. The external surface is convex and perfectly smooth; the internal concave. When closed, the greatest breadth of the instrument is 2 inches; hence the closed instrument could be drawn through an orifice two inches in diameter. The shanks of the blades, from the termination of the cephalic curve to the centre of the joint, measure 3.5 inches, making the whole distance from the joint to the termination of the blades, 10 inches. The handles of the instrument are strong, flat, generally .75 of an inch wide and 9.5 inches in length: thus making the whole instrument 19.5 inches long. The extremities of the handles are enlarged slightly and perforated so as to admit a moveable screw. This is fixed on the left blade by means of a small pivot, while a burr or nut, with lever-like handles, plays on the screw, being very light, easily managed by the fingers, and very powerful. In the most gradual, yet in the most efficient manner, can the blades be brought together by this combined action of the screw and lever. The force can be regulated with the utmost precision.

The joint is similar to that of the German forceps, with a conical, but fixed pivot. To strengthen the instrument, at this point, where the force is most concentrated, the instrument is here broader and thicker, and to maintain the parallelism of the blades, not only are the surfaces at the joints broad and flat, but a very large button is affixed to the top of the pivot, preventing the twisting of the blades on

each other. The weight of the instrument is three lbs. two ounces.

Fig. 127 gives a profile-view of the instrument, slightly turned to show the upper edge of the clam of the left-hand branch. The shanks, lock, and a section of the handle, are also shown in this figure.

Fig. 128, exhibits the entire instrument, as seen from above, completely closed.

Fig. 129, represents a section of the instrument as seen from above, with the clams applied upon the two sides of a firm fetal cranium.

Fig. 130, exhibits the burr or nut, intended to work upon the screw for approximating the handles when the instrument is in use; *f* is the orifice of the female screw, cut through the centre of the burr; *g*, *g*, *g*, are the lever-like handles, about one inch and three quarters long, having bulbs at their outer extremities.

Fig. 131, represents a screw about five inches long, intended to be joined to an oblong opening in the extremity of the handles of the left hand or male branch of the instrument, by its flattened extremity, *h*, at which is seen also a hole through which a small thumb-screw (fig. 132) is to pass to secure it in its place. The shaft of the screw represented in this figure, is to be passed through, and have free play in a still more oblong opening in the end of the handle of the female, or right-hand branch of the instrument, after it has been applied upon the part it is intended to compress or crush.

Fig. 132, displays the thumb-screw to be passed through a circular opening on the extremity of the male blade, and also through the circular opening at the end of the screw, shown in the immediately preceding figure.

In the figs. 127, 128 and 129, *a b* show the clams; *b c*, the shanks of the clams; *d d*, the handles, in part and entire; and *e*, the broad flat button on the top of the strong pivot fixed in the male blade, and offering

its neck to be embraced by the notch of the female blade or branch of the instrument.

Fig. 127.

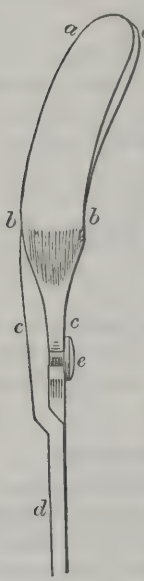


Fig. 128.

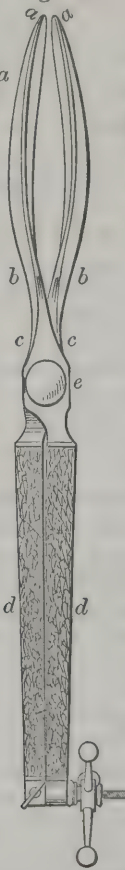


Fig. 129.



Fig. 130.

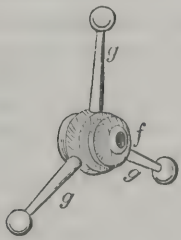


Fig. 132.



Fig. 131.



ERGOT, NOT PROPER.

Should you ever use ergot in cases of considerable deformity of the pelvis? Never, inasmuch as there would be great danger of rupturing the uterus if ergotic contractions were to be induced.

VERSION BY THE FEET IN DEFORMITIES OF THE PELVIS.

Should you perform version by the feet in such cases? The propriety of this practice is at least doubtful.

What would be the objection to this practice? We should increase the difficulty, if there was not room for the child to pass, by removing the head from the reach of instruments intended to draw upon it or diminish its size.

Who has strongly advocated the propriety and advantage of turning with the view to bring down the feet in cases of contracted upper strait? Professor Simpson, of Edinburgh.

PROFESSOR SIMPSON'S ARGUMENT.

What are his arguments in favor of this procedure? 1. The fetal cranium is of a conical form, enlarging from below upwards, and when the child passes as a footling presentation, the lower and narrower parts of the cone-shaped head is generally quite small enough to enter and engage in the contracted brim. 2. The hold which we have of the protruded body of the child, after its extremities and trunk are born, gives us the power of employing so much extractive force and traction at the engaged fetal head, as to make the elastic sides of the upper and broader parts of the cone (viz., the biparietal diameter of the cranium) become compressed, and, if necessary, indented between the opposite parts of the contracted pelvic brim, to such a degree as to allow the transit of the entire volume of the head. 3. The head in being

arranged downwards into the distorted pelvis generally arranges itself, or may be artificially adjusted so that its narrow bi-temporal, instead of its broad bi-parietal diameter, becomes engaged in the most contracted diameter of the pelvic brim. 4. The arch of the cranium or head is more readily compressed to the flattened form and size required for its passage through a contracted brim, by having the compressing power applied as in footling cases and extraction, directly to its sides or lateral surfaces, than by having it applied as in cephalic presentations, partly by the lateral and partly to the upper surfaces of the arch.

PREMATURE ARTIFICIAL DELIVERY.

What other plan does obstetric medicine propose to prevent the occasion for the use of instruments in cases of deformed pelvis? The induction of artificial premature delivery.

What is the proper stage of pregnancy for this purpose? The eighth month or a little earlier.

What is the proper mode of doing this? Stimulate the uterus to contraction, by titillating the internal surface of the os uteri—or, if this do not succeed, by puncturing the membranes.

What modes have been proposed as most suitable for exciting the contraction of the uterus, when it has been carefully decided to be proper to promote delivery prematurely? Professor Hamilton of Edinburgh, was in the practice of introducing a finger into the os uteri every day or two, till he excited the contractions sufficiently. Professor Simpson used sponge tents for the same purpose. Others have resorted to bougies, or flexible metallic sounds, and carried them up some distance between the membranes and the internal surfaces of the uterus.

Is it safe to puncture the membranes, while the os and part of the cervix uteri is still closed? It is not prudent to rupture the membranes, if it can possibly

be avoided, before the os uteri is dilated to some extent, and appears to be readily dilatable.

What are the probable chances for the life of the child when delivered thus in the course of the eighth month of gestation? So far as information has been collected on this subject, it appears that only about one in two of children thus born, are delivered alive.

What size of the pelvis demands this practice if you aim to avoid the hazards to the mother by the operation of hysterotomy? When the diameter is less than three inches, say two and three quarter inches antero-posteriorly.

Suppose the diameter be less than this, what must you have recourse to? To gastro-hysterotomy, i. e. the cesarean section; or to the use of the crotchet.

Should you ever attempt either of these operations while alone? Never, if possible to have a consultation.

When the pelvis is very much contracted, which is to be preferred, the crotchet or the cesarean section? If the child be alive, and the mother in good condition, it would be right to recommend the cesarean section.

CESAREAN SECTION, OR GASTRO-HYSTEROTOMY.

What is meant by the phrase *cesarean section*, or gastro-hysterotomy? That section of the abdomen and uterus through which the fetus, or the fetus and placenta, may be removed, solely with a view to save the life of the child, because the mother is already recently dead, or because the natural passages are so diminutive that it is impossible to remove the child, however much mutilated, through them, without inevitable destruction of the life of the mother also.

OBJECTIONS TO THE OPERATION.

What are the objections to the cesarean section? First, it involves the life of the mother in great jeopardy, particularly if resorted to when she is in a

state of excitement or exhaustion from ineffectual labor. Second, it does not always preserve the life of the child, though the risk of this is the least objection.

TIME PROPER FOR PERFORMING IT.

If it appear clearly the duty of the consultation of accoucheurs that the operation is necessary, when should it be performed? At as early a period of labor as possible. It is particularly desirable that the patient should have been subjected to as little fatigue from parturient effort as possible, previous to being subjected to so important an operation.

ACCIDENTS ATTENDANT UPON THE THIRD STAGE OF LABOR—RISKS FROM TOO LONG DELAY IN THE DELIVERY OF THE PLACENTA.

What hazards are known to result from the practice of leaving the placenta in the uterus until spontaneous expulsion takes place? Irritation, inflammation, low fever, &c.

Should you ever leave your patient so long as the placenta remains undelivered? She should not be left more than a few minutes at a time, because, although in some cases no accident has happened from a long continued retention, it is proper you should guard against dangers by proper attempts to remove it early after the child has been born.

MANAGEMENT OF SUCH CASES.

What practice is best for relaxing the mouth of the uterus, and for inducing the contraction of the fundus and the body? Friction over the body of the uterus; the application of cold by sponges of cold water or by a stream of cold water from a height, &c.

Is the practice of making cold and wet applications upon the abdomen hazardous under such or any other circumstances, except, perhaps, when the patient has inflammation of the abdomen or viscera within it? Many experienced practitioners have doubted the pro-

priety of the sudden application of cold to a part of the body usually carefully protected by warm clothing, and some express their belief that serious consequences have resulted from the employment of it in the cases now under consideration.

What should you do if external frictions and the use of cold do not succeed? Pass in the *whole* hand cautiously, and seize the placenta with the fingers and bring it down; provided, however, the insertion of one or more fingers has not been sufficient to effect this purpose.

MANAGEMENT OF THE PLACENTA WHEN THE CORD IS RUPTURED.

Is the cord sometimes so tender as to be very easily broken? It is in some cases severed by the slightest traction upon it.

What practice should you resort to for the purpose of removing the placenta in the case of rupture of the cord? The fingers or the hand should be carefully introduced within the vagina, and if necessary, within the cavity of the uterus, and made cautiously to embrace as much of the mass as practicable, at the same time allowing the uterus to expel it if possible; if not, draw it gradually in the direction of the axis of the part through which it is to pass.

RETENTION OF THE PLACENTA.

Is retention of the placenta ever dependant upon the manner in which its fetal surface offers to the os uteri? There is strong reason to believe that in numerous instances of retention of the placenta, or the delay in its expulsion is owing to the fact that the centre of the disc offers to the os uteri and the circumference is too great to be allowed to pass through the orifice of the uterus.

MANAGEMENT OF RETENTION OF THE PLACENTA.

What are the duties of the accoucheur in such cases? First to examine the situation of the pla-

centa, and if it offers in the manner proposed, endeavor to fix the curved extremity of a finger into some marginal point of the mass, make traction on it and so arrange it that it shall offer that edge to the axis of the uterus.

In attempting to do this, would not inversion of the womb be hazarded? Not at all if the operator do his duty skilfully, making the entire change of the form and position of the placenta within the uterine cavity, the opposite hand being kept on the abdomen over the anterior part of the body and fundus of the uterus, especially if the operator keeps in mind the principle that the change in the form and relations of the placenta is to be effected within the cavity of the containing organ, and without any tractive force in the direction of its axis.

COAGULA BETWEEN THE PLACENTA AND UTERUS.

Does the presence of the coagula behind the placenta, seem to retard its delivery? This has been regarded as one of the causes of delay in its expulsion.

Are there any positive means for diagnosticating the existence of effused blood between the placenta and the uterus? Most commonly this is only suspected when a part of the placenta can be felt at the orifice, while the body is still large and the fundus is high up in the abdomen. The only positive assurance that there is more or less blood effused, is derived from the observation that it escapes in greater or less quantity by the side of the placenta through the vagina.

WHAT TO DO IN SUCH CASES.

How should suspicion or proof of the existence of fluid or coagulated blood behind the patient influence the conduct of the attendants upon the patient? The suspicion of it should prompt the accoucheur to satisfy himself of the patient's general condition, especially in regard to the fulness and regularity of her

pulse, and by auscultation to determine if possible that there is not a second ovum above the placenta; then to insure contraction of the uterus, he or the nurse should make free friction over, and even compression upon, the abdominal tumor, to promote the rapid and strong tonic contraction of the uterus. At the same time he should pass a hand along the vagina into the os uteri if necessary, seize the placenta, and by a gentle but firm effort hold and draw it down.

CONTRACTION OF THE OS UTERI BEFORE THE PLACENTA IS DELIVERED.

Does the contraction of the os uteri ever prevent the delivery of the placenta? This is probably a rather frequent cause of retention of the placenta.

What varieties of contraction are there of the os uteri? That of the internal and that of the external os uteri.

How do you ascertain this? By the sense of touch upon introducing a finger within the orifice.

HOW TO ACT IN SUCH CASES.

What course should the accoucheur pursue in case he finds the os uteri contracted upon the cord, and the placenta thereby shut up in the uterus? If the contraction is only very recent and the ring of the os uteri is not very rigid, it will be his duty to hold the cord in one hand, while he passes the other in the form of a hollow cone with the cord in the centre, and by this as his guide, gently but steadily carry first the fingers and next the whole hand into the orifice, as he gradually enlarges it till he can embrace the placenta by his then expanded fingers; this done, he must make a careful rotary and downward traction upon the mass, until he has brought it through the os uteri into the vagina.

How should the fundus of the uterus be supported while both his hands are thus employed? By the well directed application of the hands of the nurse or some other attendant, until his hand is fairly introduced, but afterwards by the hand which was at first occupied in holding the cord tense.

Should the hand be made to descend first, bringing the placenta with it? To avoid the dreadful accident of dragging down the fundus of the uterus and causing partial or complete inversion of the organ, it is always most prudent for the operator to take great care that the placenta is made to pass from his flexed fingers by the hollow of his hand and wrist at least into the vagina, that he may perceive by the hand internally, and the contour of the uterus externally, that it has contracted regularly from its circumference to its centre before he withdraws entirely the hand which had been introduced.

What instrument may be used to assist in extracting the placenta in these cases? The placental hook or wire crotchet of the late Professor Dewees, as shown in fig. 133.

Fig. 133.



What are the objections to the use of this hook? It would seem to be a dangerous instrument unless when very carefully used, since, if its point be passed beyond the end of the finger it may be hooked into the substance of the uterus, and sometimes when apparently well fixed, tears out without doing more than lacerating the placenta or the parts adjoining to it.

What instruments have been proposed as a substitute for this crotchet? Dr. Bond's forceps, of which a drawing is shown in fig. 134.

What advantage does this instrument offer over the crotchet of Dewees? Being curved nearly to corres-

pond with the axis of the pelvis, it may be introduced with more facility into the cavity of the uterus, along the hand or fingers, and when inserted properly, by expanding the blades they may be made to embrace a portion of the placenta within their serrated lips, and

Fig. 134.



when traction is made upon them, if they cannot bring the whole mass away at once, their withdrawal subjects the patient to no hazard of injury.

RETENTION OF PLACENTA FROM IRREGULAR CONTRACTION OF THE UTERUS.

What is the consequence of very violent and irregular contraction of the body, as well as of the neck of the uterus? Prostration of the patient's strength, great exhaustion, faintness, &c.

What should we rely upon most confidently, for the relaxation of such spasm? Free doses of opium.

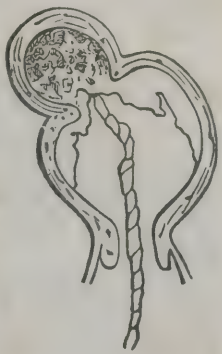
May contraction ever take place at the internal os uteri? It may, and perhaps most frequently does in cases of retention of the placenta.

How should we overcome this constriction? By the gradual insertion of the fingers, and perhaps the whole hand cautiously. In some cases bleeding and other relaxing measures are necessary.

What other part of the uterus may become spasmodically contracted? Any other parts of the body of the uterus.

HOURGLASS CONTRACTION.

Fig. 135.



What is the peculiar contraction called, in which the fibres of the middle portions of the body contract, while the other portions remain somewhat relaxed? *Hourglass contraction.*

Is there any danger of hemorrhage in this case? Hemorrhage may take place both above and below the constricted part. This complication is probably rare.

Does this kind of accident require prompt attention? It should be attended to promptly, because it usually is a case accompanied with much suffering.

What have you to do to overcome it? By frictions on the abdomen, induce the fundus to contract, then introduce your other hand into the uterus and pass it up conically through the point of stricture.

Should you try to pull the placenta away instantly? Efforts should be made to extract it cautiously, and allow the contractions to take place regularly, as the mass is removed.

How should you secure the regular contractions of the uterus, while the hand is still in it? By proper frictions upon the abdominal parieties over the fundus of the uterus, while a hand is in the free portions of its cavity, if possible.

How should you effect the relaxation of the stricture, if the means just proposed do not succeed? Put the patient into a warm bath, give her opiates, or bleed her.

ADHESION OF THE PLACENTA.

Is preternatural adhesion of the placenta very common? It is probably not by any means so common as is supposed by initial or inexperienced practitioners.

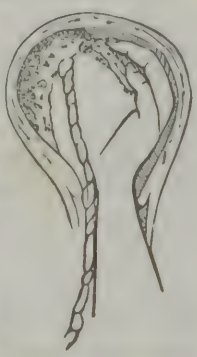
Is the diagnosis of such adhesion easy? It is not always easily made out.

HOW TO TREAT ADHERENT PLACENTA.

How should you act in a case of real or supposed adhesion of the placenta? Pass up the hand in a conical form, and when you reach the part, expand it.

Which portion of your fingers should you place in contact with the uterus, in order to detach the placenta? The pulpy portion when you can, but as this would be difficult when the placenta is at the fundus, it will almost always be more effectual to keep the dorsum of the hand to the walls of the uterus, and the inner surface of it to the placenta, (as shown in fig. 136.)

Fig. 136.



Suppose the adhesions are very firm, should you attempt to strip off the whole placenta from the surface of the uterus? It should always be done, if practicable, without injuring the substance of the uterus.

CONSEQUENCES OF FAILURE TO EXTRACT IT.

What consequences are to be expected from retention of part, or the whole of the placenta? Irritation, pain, inflammation of the uterus, and putrefaction of the placenta, with the risk of the consequences of absorption of pus.

TREATMENT OF THE CONSEQUENCES.

How should you treat the case if putrefaction should occur? By detergent washes, carried up into the cavity of the uterus by a suitable syringe and with sufficient force to irrigate it thoroughly.

What kind of syringe should you use? One of the ordinary kind, which can be attached to, or inserted into the end of a gum elastic catheter, or stomach tube, which should be carefully introduced into the cavity of the uterus, and the fluid then passed from the syringe through it—or a syringe having a long curved pipe, with a bulbous extremity, may be used for the same purpose. The force pump injection-pipe is the best kind of apparatus to be used.

What kind of fluid should be injected into the cavity of the uterus? That which is bland, mucilaginous, and detergent, as flaxseed tea, solution of castile soap, &c.

What kind will be proper when the exhalations from the vagina become fetid, in consequence of decomposition of a part or all the retained mass? They should be of an antiseptic character, as lime-water and camomile tea, aromatic spirits of ammonia, weak solution of creosote, chloride of lime, or soda, &c.

What general treatment should the patient receive in cases of putrefaction of the retained placenta? Care should be taken to sustain her constitutional vigor, by a generous diet, and even by stimulants, if she become prostrated under the irritative fever, which may ensue from the accident.

PHYSIOLOGICAL AND PATHOLOGICAL CONDITION OF FEMALES DURING THE REPRODUCTIVE PERIOD OF LIFE.

Are we to regard the periodical local plethora and ordinary uterine irritation or activity in the female after puberty, as a physiological, or a pathological, condition? As strictly physiological, and pertaining to the maturation of a germ.

Do any of the appendages of the uterus exert any influence over the menstrual function? The ovaries appear to be indispensable to it, as upon their non-existence the function does not occur, and upon their removal it becomes suspended.

Admitting that we know very little of the cause of the catamenia or menses, what does its regular appearance indicate? A healthy condition of the genital organs, and a capability for procreation or reproduction.

Are there no exceptions to the rule that women cannot conceive unless they have menstruated? Some cases are recorded in which women have conceived without having menstruated, but it is supposed that with them, conception took place just before the menstrual period would have occurred.

Which period is most favorable to conception, before or after menstruation? Immediately after the secretion has taken place.

What opinion was formerly entertained respecting the quality of the menstrual fluid? That it was extremely noxious both to animal and vegetable substances.

What is true in reference to its quality? That it possesses no noxious qualities when in a healthy condition.

HYGIENIC RULES TO BE OBSERVED.

What rules of conduct should be observed by the female during the menstruating portion of her life? All those hygienic rules which are necessary to ensure her a good physical and moral condition.

What conditions of her constitution should involve the question of the propriety of her marriage? The existence of scrofula, rickets, phthisis, and such transmissible diseases.

What precautions should be employed in early life to prevent the occurrence of such constitutional disorders? Every means should be used during childhood to develop and give tone to the various tissues of the system.

What must be regarded, in the present habits of society, as injurious to the health of growing girls? The use of ligatures and corsets about the body, in dress; the want of free gymnastic exercises for the development of the skeleton, and consequently of the organs within it; too much constraint and confinement of body in one position in the schools.

What is the value of pedestrian exercise in the physical education of young ladies? All physical exercises, as gymnastics, and particularly those on foot, as walking, jumping rope, and dancing in the open air, contribute greatly to the establishment of the health and keeping all the secretions in proper order.

What regulations should be enforced in regard to diet? The digestive organs should be kept in order by a moderate allowance of nutritious but not stimulating diet, composed principally of vegetable and farinaceous substances.

What attention should be paid to the condition of the skin? It should be kept in a soft and transpirable condition by cleanliness, regular bowels, and a proper amount of warm clothing, particularly upon the limbs.

What amount of sleep is necessary, and when should it be obtained? Not less than eight hours, which should begin with the early part of the night.

What precautions are necessary with respect to mental exercises or cerebral excitement? To avoid both to any considerable extent, and to discourage precocity of intellect.

What care should be taken in reference to the moral feelings? They should be regulated, and the passions should not be excited by reading, conversation, or other means.

DISORDER OF THE MENSTRUAL FUNCTION.

What influence may much excitement produce at the time at which the secretion ought to occur? Super-excitation of the system may so operate upon the genital organs as to prevent the occurrence of the secretion.

Under such circumstances what course should be pursued? The patient should be subjected to restricted diet, saline cathartics, and sometimes even to venesection.

How should we treat any nervous symptoms which may occur in connection with the menstrual effort? It is not often necessary to interfere much with them: mild anti-spasmodic remedies, such as spirits of nitre, camphor water, assafœtida, and such articles may be administered.

Suppose the capillary circulation be feeble, as indicated by cold extremities, soft feeble pulse, &c., what treatment ought to be adopted? That which would give tone and vigor to the system, as good diet, proper exercise, bathing, pleasant company, and agreeable mental excitement; a proper course of tonics, particularly mineral preparations, may be usefully employed.

AMENORRHŒA.

What is to be understood by the phrase, "retention

of the menses? That they have never appeared, however old the female may have become.

What is meant by the phrase, "suppression of the menses?" That having been once established, they cease to appear during some part of the menstruating period of female life.

What technical term have we to signify either of these states? Amenorrhœa.

Upon what causes may the tardy appearance of the menses depend? Defect, or absence, or want of proper development of the organs of generation, particularly of the uterus, or ovaries, or both, or diseases of them.

Do defects of this kind always interfere with the health of the patient so circumstanced? It sometimes happens that women so circumstanced enjoy good health.

Why is a knowledge of this fact important? That females may not be subject to the powerful action of medicines supposed to be emmenagogues or specifics for producing the menses.

What proofs have we of the evil consequences of attempting to *force* the menstrual secretion in some of these cases of tardy appearance? Many instances on record, in which upon dissection, organs were absent or but very partially developed, and one particularly seen by Dr. Hodge, in which after long and ineffectual treatment by emmenagogues, cathartics, and serious injury to general health; the professor in consultation, examined the patient but could find no uterus.

Under what plan of treatment did this case improve? A general invigorating course, including proper exercise in the open air.

Under what other circumstances may emansio mensium, or retention of the menses occur? When the health is bad, and the organs partially developed, and again when the health is bad and all the organs apparently developed.

What is the opinion of some experienced teachers respecting the popular notion that the retention of the menses is the cause of the ill health? That it is the contrary of what is true, and that the ill health is the cause of the retention in those cases in which the organs were properly developed.

Upon what may this ill health depend? Upon a bad diathesis, as phthisis, scrofula, &c.; improprieties in living, neglect of the means of proper general physical development, errors in the physical education, causing the female to remain a child until a late period of her life.

What condition of the nervous system, is often an accompaniment of amenorrhœa? Neuralgia, hysteria, &c.

Is it probable that the uterus ever becomes the seat of a congestion and irritation? It probably does so, in some cases, and it then appears as though the system was above the secreting point.

What inconveniences might arise from stimulating treatment in such cases? It might bring on serious consequences, as congestion, apoplexy, &c.

What then should be done? Diminish cerebral irritation by depletion, by cooling saline laxatives, antimonials, &c.

What would be proper after this had been effected? Seeking to restore the secretions by warm-bath, hip-bath, warm injections, &c. Allowing the patient demulcent drinks, as weak pennyroyal tea, &c.

Do purgatives interfere with the performance of this secretion? They do not, as has been supposed by some.

VARIETIES OF AMENORRHŒA.

Into how many varieties is suppression of the menses divided? Into two—acute and chronic.

How do we distinguish acute suppression? By the action of its cause during the flow.

How does the cause operate in chronic suppression? During the interval of the secretion.

Which is the severer form of suppression? That in which the cause acts and arrests the secretion during its flow.

What class of females is most liable to suffer from this suppression? Those of irritable constitutions or temperaments.

What may be regarded as predisposing causes of suppression? Irritability of the system.

What are some of the actual causes of affection? Certain moral influences, violent passions of the mind, frights from falls, sudden bad news, terror, dread, rumors of wars, sudden transitions of temperature, &c.

How far may physical causes operate in this respect? The sudden application of cold to the external surface—violent diseases, fever, inflammatory affections, irritation of powerful medicines, stimulating drastic cathartics,—all may act in the production of the suppression of the catamenia.

How does sudden suppression affect the system? The effect of sudden suppression, or that of the cause producing sudden suppression, is often very severe, and greatly disturbs the system which is most predominant in the individual, producing hysteric convulsions, &c., in the nervous; apoplexy in the vascular, or sanguineous temperament; attacks of gout, if the patient have a gouty diathesis, &c. In some cases, severe uterine neuralgia is induced by this check of the secretory action.

TREATMENT OF AMENORRHŒA.

What are the indications for treatment? They must be founded on the temperament and diathesis of the patient. The indication is always to diminish the secondary irritation, and correct that condition of the system which interferes with the proper action of the uterus. Thus we are to clear the primæ viæ by vomiting and purging, if obstructed, then commence with the mildest anti-spasmodic medicines, as ether, assa-

fœtida, camphor, hyosciamus, if the nevous system be much disturbed.

Under what circumstances may vascular depletion be required? When there is much plethora, or vascular excitement, the lancet should be used: if there be local pains without general vascular disturbance, cups or leeches should be applied to the part affected.

Which should be resorted to first, vascular depletion or anti-spasmodics? In cases of vascular excitement, anti-spasmodics are of little avail, unless preceded by loss of blood, cathartics, or nauseants, sufficient to reduce the circulation.

When is the use of opium indicated? Only when the course just proposed has been tried, and other anti-spasmodics have failed to quiet the system.

What is the best revulsive treatment in cases of sudden suppression? Hot pediluvia, long continued, and rendered stimulating by some spices, as mustard, ginger, &c.

What is probably one of the very best remedies we possess for this state of things? Copious enemata of warm water.

What should be done conjointly with the use of enemata? Place the patient in bed and give her warm drinks, as mint tea, pennyroyal tea, &c. to bring on perspiration.

Suppose, however, she be febrile? Then the stimulating drinks would be improper, till she had been purged and perhaps bled.

What should we hope to gain from the application of warm poultices to the vulva? They are useful, and sometimes preferable to the custom of sitting the patient over the vapor of hot water, for the promotion of secretion from the uterus.

When might leeches be applied to the genital organs? Whenever there appears to be a fulness of the uterine vessels, and the secretion does not return to their relief.

Where should they be applied? To the pudendum, to the vagina, or to the os uteri itself.

How should the leeches be applied to the os and cervix uteri? By means of a speculum, or proper tubes capable of embracing the os uteri and sustaining other parts.

When the system shall have been brought to its proper standard by the means already proposed, and the catamenia do not still appear, what additional means should be used? This would be the proper time for the administration of emmenagogues so called, as aloes, madder, senna, hellebore, Spanish flies, &c.

Upon what cause does chronic amenorrhœa depend? Mostly upon bad condition of the general health, owing perhaps to serious disease in some organs, as phthisis, hepatitis, &c.

In this case, to what part of the system should our remedies be addressed? To that affected—if the pulmonary organs, to the lungs, if the hepatic system, to the liver, &c.

What train of functional disturbance mostly accompanies chronic amenorrhœa? Spinal irritation, cerebral congestion, and irregularities of the digestive apparatus.

What kind of secretion sometimes affords a partial substitute for the true menstruation? Leucorrhœa, mucous or muco-serous discharges from the uterus or vagina, or from both.

What is the proper treatment for chronic amenorrhœa? That which improves the general health, as alteratives, general tonics, and those aperients which act particularly on the lower bowels.

In what way do the so called emmenagogue medicines usually act? Some act generally upon the constitution—some more locally upon the lower bowels—some upon the bladder, and a very few directly upon the uterus itself.

With what organs does the uterus appear to have a directly sympathetic connection? With the mammæ.

What advantage does this knowledge afford us in

the treatment of amenorrhœa? That by stimulating the mammæ, we have sometimes excited the secretory action of the uterus.

What direct applications have been made to the uterus with benefit? Injections per vaginam, of ten or more drops of acetate of ammonia to one ounce of milk.

What means have been thought useful in promoting the menstrual secretion, by acting directly upon the nervous system? Electricity and galvanism.

What is to be said of the effect of physical excitement of the organ by matrimony? It may be adapted to a few particular cases, but is often attended by an aggravation of the condition of the uterus, sometimes inducing permanent disease in it.

What are probably the very best general remedies operating on the bowels we can use in amenorrhœa? Rhubarb and aloes in combination.

What substances have been thought useful by acting on the kidneys or bladder? The spirits of turpentine, the copaiba, and various other balsamic preparations. The tincture of cantharides has been regarded as useful by many.

What other articles of the materia medica are supposed to have a sort of specific action upon the uterus? Madder, guaiacum, savin, iodine, strichnine, and black hellebore.

In what doses should the savin and the black hellebore be administered? Half a grain of the extract, or from five to ten grains of the powder of savin—of the tincture of hellebore from ten or twelve drops to a teaspoonful, two or three times a day, one or two weeks before the expected time.

Can either of these powerful remedies be used in any or every condition of the system? They all require caution. The system should be properly prepared for the action of either of them, by bleeding, purging, &c., whenever there is a plethoric or an inflammatory diathesis.

What plan of treatment may be continued through the whole time, without regard to periods? The hydriodate or other preparations of iron, madder, spirits of turpentine, and tincture of cantharides.

RETENTION FROM PHYSICAL CAUSES.

By what causes may the menses be retained, when the organs are well developed, and the health of the female good? By absence of the vagina, occlusion of the os tincæ, closure of the hymen, vulva, or some such mechanical obstacle to its escape.

What occurs in such cases? The secretion goes on, but the fluid is accumulated, because it has no outlet.

What consequences result from this obstruction? In time, the abdomen swells, the condition of the patient excites suspicion of pregnancy, dropsy, or the formation of a tumor, and the opinion of a physician is appealed to.

DUTY OF THE PHYSICIAN IN SUCH CASES.

What course should he pursue? First, make a careful inquiry into the history of the case, then make a proper physical examination of the parts.

What may he expect to find in case the occlusion exists in the hymen? Distension of the part, the membrane of a dark blue color, with a sense of fluctuation.

What may he expect to find in case the atræsia exists in the orifice of the uterus? If at the os tincæ, he may find a tumor like the extremity of an ellipse, projecting into the vagina, and fluctuating under the touch. If at the internal os-uteri, the neck and external os-uteri may be but little changed from natural, but the body may be found expanded out into a sort of globular tumor, somewhat compressible to the touch.

What becomes of this affection, if not relieved by an operation? Sooner or later an opening is formed, and the fluid escapes.

What is the direction of the opening? It is various; sometimes in the rectum, and sometimes into other parts.

If the hymen be entire, what kind of an opening should be made into it? Crucial, or stellated.

Suppose the vagina to be absent, what risk would there be in attempting an incision for the escape of the accumulated fluid? It would be dangerous to attempt operation for the exit of the retained menses unless it were performed by one possessed of great anatomical and surgical attainments.

When the obstruction exists in the uterus itself, what plan should be adopted? Attempts should be made gradually to dilate the orifice by a series of bougies.

Is this an operation easy to be accomplished? It is often extremely difficult.

What is the true method of doing it? Pull the os tincæ forward by a finger in the vagina, or anus, and keep it pressed towards the pubis, to make the neck of the uterus have the same axis as the inferior strait, and then cautiously pass the bougie.

CHLOROSIS.

To what condition of the system is the term *chlorosis* applied? To that, in which about the menstruating period of life, there is great pallor of the skin, and torpor of all the functions of the system.

What does this state of the system indicate? An impairment or defect of the vis vitæ, a general functional derangement.

Why is it called chlorosis? Because persons affected with it, are vulgarly said to have *green* or *falling* sickness.

How does it generally begin to develope itself? By a desire to eat outre articles; as dirt, slate pencils, recently quenched coals, &c.

What is the condition of the alimentary canal in

such cases? Torpid throughout; digestion slow, bowels constipated, stools clay colored.

What is the probable cause of the pallid, or pale yellow or greenish color of the skin? The extreme torpor of the liver.

How is chlorosis to be distinguished from icterus? By the want of the yellow deposit in the adnata of the eyes.

What is the condition of the cerebral and vascular systems in chlorosis? The intellect is very torpid, and the pulse soft and without force.

How is the nervous system affected? The nerves of sensation and motion, are sometimes greatly disturbed, hence hysteria, and neuralgic pains.

What is at present to be said, respecting the plans often adopted for the treatment of this affection? The practice is very often erroneous, especially when the neuralgic pains in the side have been mistaken and treated for pleurisy or inflammation.

What reasons may practitioners have had for diagnosticating inflammatory diseases and resorting to depletion in these cases? Probably, that in conjunction with the pain, there is sometimes palpitation and febrile excitement.

What are the consequences of the case becoming chronic? They are often serious and difficult of cure.

What is the usual condition of the organs under such circumstances? They are sometimes found diseased and altered, but most frequently they are in an anemic condition.

What are the results of this disease? Some patients recover and get entirely well; while others become affected with dropsy, &c.

Does the uterus ever perform its functions during this chlorotic state? Some patients have a slight, serous menstruation—sometimes it even contains red particles.

What conditions of life are most favorable to the

occurrence of chlorosis? All densely populated places, where there is a deficiency of good air and exercise, and hence especially in the large manufacturing towns of Europe, and even in this country where girls are sent too early and confined too closely to school.

TREATMENT OF CHLOROSIS.

What are the true indications for treatment in cases of chlorosis? To give strength to the system by restoring the healthy condition of the digestive apparatus.

What is to be done to the reproductive organs, at this time? No especial attention is to be given to them, until the constitution is improved.

What regard should be had to the full development of all the organs in the body? This is most important, and every proper means should be availed of for this purpose.

What kind of medicine should be used? Such alteratives as moderately increase the action of the mucous membranes.

If calomel be employed, in what way ought it to be administered? In doses of from one eighth to half of a grain, and cautiously repeated.

What regard should we have for the powers of digestion during this course of medicines? Carefully avoid impairing the function of digestion, but rather stimulating it.

Is it proper to use any additional alteratives? The preparations of sarsaparilla are appropriate in some of these cases in conjunction with the calomel, or blue pill.

Why is iodine, or some of its preparations indicated? Because, in proper doses they stimulate the organs of digestion.

What influence do the mucous secretions exert, if left within the cavities in which they were formed? They irritate the system and disturb the digestive function.

How then ought they to be disposed of? They should be carried off by proper laxative, or aperient medicines.

What may be regarded as the best medicines for this purpose? Rhubarb, aloes, senna, castor oil, &c.

Under what circumstances would moderately stimulating, or cordial, bitter tinctures, become useful? When there is a sluggish, or cold state of the system.

What course should be adopted, when the alterative and aperient plan have been carried into effect? The patient should be put upon the use of tonics; as infusions of camomile, or wild cherry bark; or the preparation of iron: as the oxide, the sulphate, and the iodide of iron, or the pure metallic iron.

Is it reasonable to expect the catamenia to appear before, or after the restoration of health? Not until after the health has improved.

DYSMENORRHŒA.

What is meant by the term *dysmenorrhœa?* Severe pain during the act of menstruation.

How is the secretion in regard to amount and frequency? It may be, and generally is, regular in regard to its return, but the quantity secreted is usually less, though some think it is rather greater in some instances.

What opinions exist in reference to the cause? Some say the difficulty exists in the secretion of the fluid, others that it is owing to an obstruction, or difficult *excretion* of the fluid after it has been *secreted.*

What temperaments seem to be most liable to it? Nervo-sanguine temperaments.

At what age of menstrual life does it occur? Women are subject to have it occur at any portion of their menstrual life.

What is the usual condition of health in the intervals? Good:—if impaired, it mostly is so from some other cause.

SYMPTOMS OF DYSMENORRHŒA.

What are the symptoms of dysmenorrhœa? A sense of coldness, nervousness, &c. Pain in the upper part of the sacral region, thence round the ilia, or through to the hypogastrium—sense of fulness and bearing down in the pelvic region.

Are these feelings constant or paroxysmal? They occur in paroxysms, like labor pains; indeed in some cases it is difficult to distinguish them from efforts at abortion.

What sympathetic disorders arise from, or accompany the paroxysms of dysmenorrhœa? Flatulence, constipation, vomiting, bilious nervous headache, palpitation, throbbing, &c.; sense of fulness and actual congestion in the lower part of the abdomen.

What is the usual duration of one of these paroxysms? Sometimes this severe suffering continues for a day or two, when the secretion appears and the patient becomes easier.

What is noticed as peculiar in the discharge in some cases? That it is membranous, and thrown off in shreds, or in an entire sac resembling the shape of the internal surface of the uterus.

What is probably the exact character of this mass? Opinions appear to be various. Some think it a coagulation of blood, and not the lymph of inflammation, as that formed in cases of croup.

What is the probable cause of the pain, if the idea of a mere coagulation of secretion be correct? The pain would then seem to depend upon the severe contractions of the uterus to expel the coagulum, &c.

What influence does this condition of the secretory function of the uterus appear to have upon the general health? Very often the health of the patient in the interval remains good, though the disease has continued to return with unabated severity from one to twenty years. It is however true, that the health

may become impaired in some cases, during the existence of dysmenorrhœal state.

What is the condition of the mouth and neck of the uterus in the female affected with dysmenorrhœa? In general the neck is tumid and the mouth a little open.

What is known respecting the capability for conception, in females affected with dysmenorrhœa? As a general rule, females so affected do not conceive—but numerous exceptions to the rule exist.

CAUSES OF DYSMENORRHŒA.

What are the general predisposing causes of this disease? Temperament, particularly that of the nervo-sanguine.

What may be regarded as occasional causes of this disease? Cold, violent mental emotions, fright, &c. It has been brought on by matrimony—it is sometimes the result of metastasis of cutaneous or neuralgic disorders, or of gastric affections.

What agency may displacements of the uterus exert in the production of dysmenorrhœa? It is very liable to follow any displacement of the uterus.

What may be considered as mechanical causes of dysmenorrhœa? Besides the various displacements of the uterus which may be regarded to some extent decidedly mechanical, causes are occasionally found in obstructions of the internal and external os uteri, and also in the canal of the cervix uteri.

What may be said of the severity of the pain in some cases of dysmenorrhœa? That it is greater than that of labor.

What idea is entertained respecting the inflammatory or neuralgic character of this affection? Some think it neuralgic or spasmodic, which is often true—others regard it as inflammatory. By some good authority it is thought that it most probably depends upon excitement of the vascular system, upon a congestion not amounting to actual inflammation. In

other words, an exaltation of vitality—a nervous excitement with vascular congestion. Some practitioners, as Dr. Dewees, thought it depended upon low or *depressed action*.

TREATMNT OF DYSMENORRHŒA.

How is the treatment of this affection to be divided? Into that which is to be applied during the paroxysms, and that to be used in the interval.

What should first be resorted to in the paroxysm? A free bleeding to the amount of thirty or forty ounces—next, cups to the sacrum, or leeches to the vulva, groin, or the uterus itself—then enemata of warm mucilages, and as soon as the vascular excitement has been allayed, the warm hip bath should be employed.

When may narcotics be resorted to? As soon as vascular excitement is allayed, anodyne enemata may be used with advantage.

What anodynes are best in this case? Dewees recommended camphor enemata, and Parrish found marked benefit from directing patients to take four grains of camphor, three times a day, two or three days before the time of the paroxysm. The Dover's powder is also useful in allaying pain and exciting the action of the skin. Other narcotics, as hyosciamus, &c., are sometimes beneficial.

What other article has been thought useful in diminishing the severity of the attack? The acetate of ammonia.

What should be done in the interval to prevent the return of the paroxysm? Endeavor to ascertain the cause of the dysmenorrhœa, and if possible remove it. Thus if the patient have displacement of the uterus, it must be corrected. The same may be said of the digestive organs, which should be restored if out of health, by proper exercise, alteratives, tonics, and laxatives.

Are patients ever benefited by rest? It has been thought useful in some cases.

What may be said of cold bathing? It is useful in the intervals to keep down any inordinate vascular excitement.

Can every patient bear the action of cold bathing? Not every one, and hence it must be tried cautiously. To those whom it suits it is very useful.

What internal remedies have been proposed in the interval as useful in the prevention of the returns of the paroxysms? Sulphuric acid, sulphate of zinc, preparations of senega, volatile tincture of guaiacum, &c.

What can be said of the efficacy of the last article, so highly recommended by Dr. Dewees? Experrience has taught that it is not useful in all cases.

What should be the immediate object of the treatment just before the expected paroxysm? To relax the system and prevent spasm by using the warm bath—by retiring early to bed—by opening the bowels—by large warm mucilaginous enemata—by the use of warm injections into the vagina—warm cataplasms to pudendum, and by a moderate use of anodynes.

What is the proper treatment of mechanical dysmenorrhœa? Some practitioners are in the habit of dilating the constricted portion of the mouth or neck by bougies of different sizes.

Can this plan be relied upon as effectual? It has not succeeded in all cases, though it generally mitigates the suffering.

MENORRHAGIA.

What are we to understand by the term *menorrhagia?* An increased or excessive secretion of the menses.

Are we to receive this term in a positive or relative sense? Menorrhagia is a relative term, as different persons differ so much in regard to the amount, and

the same person may be so different at different times in this respect, that it is to be considered as a menorrhagia, only when it is productive of bad consequences.

What is the pathology of menorrhagia? It is evidently in some cases the result of an inflammatory action, but in many females it is accompanied by a feeble state of the system.

What period of life is most incident to it? It most commonly occurs at the latter part of menstrual life, though some young women are subject to it.

CAUSES OF MENORRHAGIA.

What are some of its causes? Nervous excitement, vascular excitement, fevers, &c., cold checking perspiration, causing internal congestions, &c.

By what is it aggravated? By some diseases and displacements of the uterus, as anteversion, retroversion, &c.

With what is menorrhagia easy to be confounded? With hemorrhage from the uterus, caused by polypi, ulcers, cauliflower excrescences, &c.

What are the only positive means of discrimination in such cases? Careful physical examination.

With what other affection may menorrhagia be confounded? Abortion and its attendant hemorrhage and lochia.

TREATMENT OF MENORRHAGIA.

Upon what should the treatment be founded? As accurate a knowledge as possible of the cause.

What kind of treatment is mostly indicated? An antiphlogistic treatment, sometimes involving sanguineous depletion—then revulsives to the lower extremities, by dry warm feet, blisters, setons, and stimulating liniments, &c., but occasionally the patient requires tonics.

What internal remedies should be given? The saline laxatives, saline mixture, digitalis, &c., and

when the excitement is allayed, small doses of ergot should be administered.

What treatment seems peculiarly proper in the intervals? The application of cold, moderate at first, but gradually increasing in intensity, as the cold bath, cold douches, &c.

Upon what do the irritative forms of menorrhagia depend? Upon an irritable condition of the uterus, perhaps the result of over excitement of the organ.

Towards what point should our attention be particularly directed in such cases? The condition of the uterus.

What is the result to the patient, from protracted menorrhagia, arising from any of the several causes? Extreme debility, anemia, dropsy, and sometimes completely broken health.

Which should claim our attention most, the constitution or the discharge? Gooch, says in this case, take care of the discharge; but Hodge, says very properly, take care of both. Remove all aggravating causes; thus, if displacements exist, rectify them, abstain from all sexual excitements, and take care to improve the tone of the system, support patient with animal food, &c., clothe her warmly, particularly about the feet, give her a proper allowance of wine, make use of rough frictions and other revulsive remedies, as dry cups, rubefacients, and particularly blisters.

What internal remedies may be administered, as astringents, to check the discharge? The sugar of lead, or the sulphate of zinc; one of the best preparations, is probably rhatany. Monesia, and infusion of red roses have been recommended, so also, have small doses of ergot, say four or five grains, four or five times a day.

LEUCORRHŒA.

Are females liable to any other affections during the menstrual life, which seem to depend upon it?

They are, particularly to a white secretion from the uterus and vagina, sometimes from both.

What is this white secretion called? Fluor-albus, or leucorrhœa, or vulgarly "whites."

CAUSES OF LEUCORRHŒA.

Upon what does this secretion appear to depend? The application of specific virus, as that of gonorrhœa; the presence of some irritating body, as polypus, and other tumors; and it may arise from any of the ordinary causes of inflammations. By some, indeed, it is regarded as uterine catarrh.

DIFFICULTIES OF DIAGNOSIS.

What difficulties are there in the way of correct diagnosis? Perhaps, principally, the ignorance of physicians, growing out of the reluctance on the part of patients, to make their true situation properly known.

Into what divisions should we separate leucorrhœa? Into uterine leucorrhœa, and vaginal leucorrhœa, a distinction some think important to be made.

What are the rational signs of leucorrhœa being uterine? 1. It often comes on as the precursor of beginning menstruation. 2. It sometimes occurs immediately before the red discharge, and again exists, after the red discharge has ceased, thus leaving the patient only one or two weeks freedom from any discharge. 3. Sometimes uterine leucorrhœa entirely substitutes the red menstrual secretion.

What other circumstances have been noted in regard to it? It sometimes comes on about the critical period; rarely is seen after the fiftieth year of life, and is most frequently preceded or accompanied by symptoms of uterine irritation; it also often follows abortion, and even some cases of parturition at term.

What symptoms are usually attendant upon the

irruption of leucorrhœa? Sometimes they are acute, resembling those of menstruation, or even of dysmenorrhœa; as pain in the back, fever, sometimes nervous disturbance, as hysteria, &c., flatulency, dysuria, pain down the thighs, fulness and sense of tension of the labia; after these bad feelings have existed a time, the discharge usually comes on.

CHARACTER OF THE DISCHARGE.

What is the general character of the discharge? Generally it is serous, or watery, and perfectly transparent; sometimes it is mucous, and occasionally it is albuminiform and adhesive.

Whence is this adhesive secretion thought to originate? From the glands in the neck of the uterus.

What are some of the physico-chemical characters of uterine leucorrhœa? Columbat, upon the authority of Donné, says mucus secreted by the uterus is always alkaline, restores the blue color of the litmus paper; turns the syrup of violets green, and has such a slimy, ropy and tenacious consistence, that it can be detached from the os uteri only with great difficulty.

How long may the disturbances resulting in leucorrhœa continue? From a few hours to several days.

CHRONIC LEUCORRHŒA.

What are the symptoms of chronic leucorrhœa? They are the same as, but less intense than, the acute. They sometimes occur in the interval of the menses, though the discharge sometimes substitutes the catamenia. Chronic leucorrhœa is usually less inflammatory, but still it exhausts the patient if long continued.

What is the result to the constitution, of the exhaustion by such secretions? Increased irritability, in proportion to the reduction of strength.

What is probably the correct opinion respecting many cases of disease in females called spinal irritation? That in very many cases they originate in irritation, from displacement or otherwise, in the uterus.

How does Dr. Hodge trace up the chain of morbid nervous actions or sympathies in these cases? If a patient have uterine irritation or leucorrhœa, irritation is extended to the spine, and may finally induce universal neuralgia—as odontalgia, otalgia, &c., &c., dyspnœa, palpitation, dyspepsia, &c.

To what point should we direct our remedies in such cases? To the cure of the original uterine irritation, and then the other affections will subside, if they have not been too long continued.

What characteristics of the discharge distinguish the chronic from the acute form of leucorrhœa? In the chronic form the discharge is usually thinner than in the acute variety.

Which variety is most obstinate and difficult to cure? That which is thick like albumen.

What relation does this leucorrhœal secretion hold to the morâle of the female who is subject to it? Certain moral causes or impressions act upon this secretion to aggravate it, and this again seems to re-act upon the morâle of the patient and render it more irritable.

How are we to explain the occurrence of leucorrhœa in place of menstruation? In some cases the excitement in the uterus is not sufficient to cause a red discharge; when the excitement is not very great we may have leucorrhœa; but again, when the excitement is inordinately high, even menorrhagia may be the consequence.

What are some of the prominent causes of leucorrhœa? Want of cleanliness, over stimulation of the organs by prostitution, &c.

Stimulating emmenagogues, the irritation of foreign bodies as pessaries, &c., particular diseases of the

uterus, including displacements, abortions, remains of placenta, &c. &c.

Are we to regard leucorrhœa as the result of an inflammatory action? By some very respectable authority it is regarded as rarely inflammatory, but as the result of a moderate degree of irritation or excitement.

How is simple leucorrhœa to be distinguished from the specific affection called gonorrhœa? In gonorrhœa there is usually ardor urinæ, and it is said by some surgeons that a discharge may be actually squeezed from the urethra in cases of gonorrhœa, while neither of these symptoms attend simple leucorrhœa.

How are we to diagnosticate uterine from vaginal leucorrhœa? By the fact that the former is connected with menstruation, sometimes complicated with it, and sometimes becomes a vicarious substitute for it.

What are the distinguishing characters of true vaginal leucorrhœa as described by some of the French physiologists? True leucorrhœa is thick and creamy, will not adhere to the fingers; reddens litmus paper and appears to be composed of little oval bodies, resembling pellicles or scales from the mucous membrane.

What are the microscopic signs of the existence of venereal vaginitis, or blenorrhagia? Columbat says the discharge is always composed of pus mixed with the proper mucus of the vagina. Donne declares that pus globules are discovered by placing a drop of the mucopurulent fluid between two fine glasses, and examining them with the microscope of 250 to 300 diameters. These infusory animals, whose bodies are transparent, and of round or oval form, with a diameter of $\frac{1}{120}$ to $\frac{1}{50}$ of a *millimetre*, are most commonly united in groups of from two to six individuals—when examined by the light of a lamp they may sometimes be seen to move, more especially to agitate in every direction a long filiform and very delicate appendage, which serves to distinguish them from the spherical and inanimate globules of true phlegmonous pus, in which latter the *trichomonas* never is observed.

What is a Millimetre? The thirty-nine thousandth part of an inch.

TREATMENT OF LEUCORRHŒA.

What rules of treatment are we to observe for uterine leucorrhœa? The same that have been laid down for the management of cases of emansio mensium or chlorosis. When connected with menorrhagia, to be treated as such.

What is to be done with those cases of leucorrhœa dependant upon displacement of uterus, the presence of foreign bodies, or diseases of the uterus? Remove the cause by appropriate treatment, and the leucorrhœa will soon subside.

What treatment is necessary for the acute form of leucorrhœa? Some cases require antiphlogistics, as general bleeding, or cups, leeches, and alteratives, and after reduction of general excitement, the use of proper local remedies, as tepid and cold injections of mucilage into the vagina. If much irritation exists in the parts, warm fomenting injections should be used to favor the discharge.

What should be done if the disease persist notwithstanding the use of these remedies? Revulse, by blisters upon the sacrum, and hypogastrium; and if these do not succeed, treat it as a case of uterine irritation.

What is the duty of the physician in attempting the management of chronic cases of leucorrhœa? To discover if possible, and remove the predisposing, the actual and the aggravating causes.

What may be said respecting the use of local remedies? That in general too much reliance is placed upon them, and too little regard had to the improvement of the general health by proper constitutional remedies.

What remedies have been thought to act directly upon the secretory surfaces of the uterus and vagina? Of those to be used internally or by the stomach, the balsam of copaiba, the spirits of turpentine, the tincture of cantharides. In the menorrhagic leucorrhœa, or

that complicated with menorrhagia, the ergot has been prescribed; some of the preparations of iodine have been thought useful; externally the use of continued blisters, or of pustulation from tartar emetic ointment, with cold douches to the back and into the vagina, have been useful, in allaying the local irritation.

When may we hope to derive benefit from astringent injections? When the constitutional and local excitement have been subdued by the means already pointed out.

VAGINAL LEUCORRHŒA.

What is to be said respecting the frequency of vaginal leucorrhœa? It is more common than that from the uterus, and very many females are incident to it.

What are the causes of vaginal leucorrhœa? The irritations from certain foreign bodies in the vagina, as pessaries, &c. The use of instruments in terminating labor, or abortion; violence done to the vagina in the commission of rape, &c. Chemical or vital irritants, as stimulating injections, the escape of urine into vagina, acrid discharges from the uterus, the presence of tumors in the uterus and vagina, &c., excessive venery, or prostitution, &c. &c.

How far may leucorrhœal discharge depend upon enfeebled condition of the general health? It is sometimes dependant upon this condition of the general health entirely.

To what extent is it dependant upon sympathetic irritation in other parts? It is known in some instances to be caused by gastric irritation, by ascarides in the rectum, by diseases in the anus, as hemorrhoids, fistulæ, &c.

How far may habits of life, and the condition of climate operate in its production? They may have considerable influence. The women who use foot stoves, who indulge in various luxurious habits, or who reside in very moist climates, are said to be more prone to it than those under different circumstances.

VAGINITIS.

To what state of the vagina is it owing? Generally to an inflamed state of the canal.

Is it more common in the married or unmarried female? In the married female, though even very young girls are sometimes affected with it.

What are the symptoms of vaginitis? There is a sense of fulness in the pelvis, sometimes, though rarely pain, but more frequently a sensation of heat in the course of the vagina: with this there is often tenesmus, and a mucous discharge from the rectum, also dysuria, the urine being natural in quality, but the canal of the urethra irritable from the extension of the irritation from the vagina.

DIFFERENT STAGES.

Into how many stages do some authors divide this affection? Into two, the acute or severe, and the chronic or mild stages, or forms.

What is the usual character of the discharge in the severe form? It is acrid, sometimes red, like bloody serum.

What is it when the inflammation is milder? It resembles mucus or muco-puruloid matter; sometimes it is of a greenish color; when the affection has become decidedly chronic, the discharge is usually of a thin yellowish color.

How does acute vaginitis usually terminate? By resolution, or it runs into a chronic or milder form.

To what extent does it go when it is very severe and somewhat protracted? It then may involve the muscular or fibrous coat; unless, however, the mucous coat shall have been destroyed by the inflammation, or ulceration, or by a wound, the surfaces do not become adherent to each other. In some instances, moreover, sloughing does actually take place.

GONORRHŒAL VAGINITIS.

What is the diagnosis of gonorrhœal inflammation of the vagina? In this variety of vaginitis there is ar-

dor urinæ, inflammation in the inguinal lymphatics, and in the severer forms, ulcerations of the os tincæ have been observed.

Is it necessary that the vaginitis shall be of a specific character, to produce an irritation in the penis from the act of coition? Leucorrhœa *per se* may be so acrid as to cause irritation in the male organ when exposed to contact with it.

TREATMENT OF VAGINITIS.

What is the appropriate treatment of acute leucorrhœa? Vascular and intestinal depletion, revulsive, &c. If the general vascular system be affected, venesection, saline cathartics, low diet;—locally, cups to the back, or leeches to the vulva; then promote secretion by warm hip bath, warm mucilaginous injections into the rectum and vagina.

What is proper after the inflammation has been reduced? Astringent washes, as solutions of sulphate or acetate of zinc, acetate of lead, alum, borax, nitrate of silver.

What peculiar effect does alum produce? It coagulates the secretion, particularly if the alum be previously burnt, or thoroughly dried.

Suppose the inflammation to have been such as to be followed by adhesions of the walls of the vagina, what treatment should be persued? The contractions and occlusions thus formed should be overcome by the use of bougies or other proper dilating instruments.

CHRONIC LEUCORRHŒA.

What are some of the causes of chronic leucorrhœa? Chronic inflammation of the vagina, displacements of the uterus, ulcerations in the vagina, or uterus, &c.

Can chronic leucorrhœa be readily distinguished from chronic gonorrhœa? It is almost impossible to make out the difference between them.

TREATMENT OF CHRONIC LEUCORRHŒA.

What are the general indications in the treatment

of the chronic form of leucorrhœa or vaginitis? To improve the general health by the use of fresh air, wholesome diet, tonics, alteratives, as preparations of iodine, &c.; then resort to local treatment; if there be ulcerations, first cure them. As alterative remedies, the balsam of copaiba, and tincture of cantharides, have had some reputation.

Have we probably any specific for the cure of this complaint? Nothing which can be relied upon as such.

What kind of topical applications are best when the system has been prepared for their use? Astringent washes of decoctions of logwood, nutgalls, oak bark, &c.

Should any rule be observed in reference to the mode of application? They should be passed slowly, but far up, to distend the whole vagina, and bring the remedy in contact with the whole mucous surface.

What mineral astringents are useful? The sulphate, or acetate of zinc, or of lead, one drachm to half pint of mucilage of gum arabic, to render it slightly adhesive to the vaginal surface. The alum, as mentioned in the reduced state of acute vaginitis, is particularly useful.

What is the probable origin of the pure milky white discharge which occurs in some cases? Its origin is not well defined; it is sometimes supposed to come from the glands of the neck of the uterus, but it has been seen issuing from the vulva.

What is the best mode of cure of the peculiar state giving rise to this discharge? The application of the solid nitrate of silver, or a strong solution of the article to the part affected.

PAIN IN THE BACK, &c., NOT ALWAYS DEPENDANT UPON VAGINITIS.

Upon what affections besides those of the uterus may the pain in the back, &c., depend? It may be caused by some disease in the kidneys, in the bladder,

&c., or it may be of a neuralgic, or rheumatic origin, independent of any uterine affection.

In those dorsal or lumbar pains accompanying disturbance of the uterus, is the pain constant or intermittent? It is sometimes intermittent, paroxysmal, and of a neuralgic character; it is mostly moderated by assuming the recumbent position; though sometimes the pain is constant even when lying down.

Are these painful sensations necessarily the result of inflammation? They do not always depend upon inflammation, but frequently upon a state of irritation.

IRRITABLE UTERUS.

What are we to understand by the phrase "*irritable uterus?*" A morbid sensibility of this organ, without inflammation or change of structure; a condition which has continued in some cases for several years without affecting any organic lesion perceptible to the senses.

What influence does this irritability of the uterus appear to have over the exercise of its functions? It causes them all to be painfully performed.

What is the effect of touching the uterus while it is in an irritable state? It is extremely painful, sometimes causing the patient to scream.

Can the function of reproduction be carried on in cases of irritable uterus? Sterility mostly, though not perhaps always, accompanies irritable uterus.

What are the principal causes of irritability of the uterus? Disturbance of function, and displacements of the uterus; in some cases, it is dependent upon the character of the constitution, frequent labors, abortions, &c.

By what circumstances is the sensibility aggravated? By distension of bladder, or rectum; by any severe exercise which causes pressure upon the uterus.

Is this affection necessarily complicated with any other? It often exists entirely alone, but in some

instances it is combined with an inflammatory state of the organ.

What influence may depressed or disturbed states of mind have over the production of this affection? They may exert so potent an influence as to require the condition of the mind to be improved before any other treatment can be effectual.

What consequences may irritable uterus produce if not speedily cured? Dysmenorrhœa, or menorrhagia, or a train of morbid sensibility, or nervous excitability, hysteria, spinal irritation, &c.

TREATMENT OF IRRITABLE UTERUS.

What are the curative indications in irritability of the uterus? The removal of any or all the causes which have produced it. Thus, if there be any displacement of the uterus, it must be properly restored, and kept in its proper situation by mechanical or other efficient means. If it has come on after any violent effort of the uterus, as after labor, or abortion, the patient must be kept quiet, and her bowels *moderately* open; if there be any local inflammatory excitement, leeches may be applied to the sacrum or groins.

Is there any objection to the application of leeches directly to the uterus in case of irritability of that organ? Their application would be painful, and sometimes aggravating.

What constitutional remedies should be employed? During the three weeks immediately succeeding the menstrual discharge, she should use the cold bath, either local or general, with a view to obtain a reaction and healthy glow of warmth, and by thus increasing the strength, diminish the irritability of the nervous system; cold douches down the back—cold water into the vagina—large quantities of cold water into the rectum and colon to distend them, and produce the two-fold effect of removing the feces and giving tone to the nerves.

What rule for diet and exercise should be observed?

In the more chronic or protracted form, the diet should be nutritious, and solid or animal, and not entirely vegetable. The patient should be carried out into the open air whenever possible, and she should use exercise on foot whenever she is able, without aggravating her symptoms.

What is to be said respecting counter-irritants? They, such as tartar emetic, croton oil, moxa, and perpetual blisters or setons seem to be in general too irritating to the system, and rather aggravate than relieve.

Under what circumstances are narcotics called for? During severe attacks of pain, the cicuta in two grain doses, three or four times a day, gradually increasing the quantity if necessary; stramonium, belladonna, hyosciamus, lactucarium, &c., are sometimes very useful in allaying the pain, provided the use of them is continued through several weeks.

What alterative tonic have we which is often useful in these cases? Lugol's solution of iodine, or the hydriodate of potash. Five, ten, or twelve drops, three times a day, of the strong solution, continued a long time, often improves the appetite and the vigor of the general system.

What other parts of the pelvic viscera of the female have been observed to be subject to this morbid irritability? The vagina, vulva, and urethra.

What treatment is proper for these cases? The same as for irritable uterus.

DISPLACEMENTS OF THE UTERUS—PROLAPSUS.

To what variety of displacements is the uterus subject? To prolapsus in its several degrees—to retroversion partial and complete—to anteroversion—to anteflection—to retroflection, and to a hernial displacement.

Are either of these displacements capable of being positively diagnosticated by the rational or sympathetic signs? No; there are numerous other affections liable to occur in the female pelvis, which give

signs strongly resembling displacements. Thus, congestions of the uterus, irritable uterus, irritable urethra, irritable vagina, irritable rectum, polypous and other tumors in the uterus or vagina, ascarides in the rectum, or accumulation of hardened feces in that intestine, have all produced sympathetic symptoms similar to those of prolapsus or other displacements.

SYMPTOMS ATTENDANT UPON DISPLACEMENTS OF THE UTERUS.

What are the symptoms usually attendant upon displacement? Many of the symptoms of local inflammation—weight in the pelvis while in the erect position—bearing down—disposition to strain, as if to evacuate the bladder or bowels—sensation as though something must fall away—pain in the sacro-lumbar region, thence all round to the hypogastrium; pains in the bones of the pubes, probably from the stretching of the round ligaments: this is relieved at once by lying down—pains sometimes intermittent, like those of labor—a more or less fixed pain in the side, sometimes in one side, sometimes in the other, sometimes in the one inguinal region or the other, and often with a sense of dragging from the umbilicus.

What effect has certain states of the bowels on the feelings of patients who have displacements of the uterus? If the bowels are moved regularly and without effort, and the patient is not in a highly irritable condition, she may feel comparatively well; but if the bowels be constipated, the weight of the feces aggravates the feelings of the patient: and if she have a diarrhœa, the frequent actions of the bowels greatly increase her distress, by still more dragging down the uterus.

Which most sympathises in this local disturbance of the uterus, the vascular or nervous system? The vascular system is usually little affected, but the nervous sympathies often become very extensive; thus, the spinal marrow, or the brain itself, takes on the char-

acter of spinal or cephalic irritation, and in time the neuralgia of almost every organ may occur in succession or simultaneously.

What appears to be proof that this irritation has depended upon displacement of the uterus? The fact in some cases instantly, and in most others sooner or later, all these distressing affections have ceased after the restoration of the uterus to its proper place.

TRUE METHOD OF DIAGNOSIS.

As there are many other affections already alluded to, which cause symptoms resembling displacements of the uterus, is it proper that the physician should at once determine, by physical examination, what the true diagnosis is? This should be regarded as a fundamental rule in the duty of treating diseases, but as in this case the feelings of both patient and physician should be spared if possible, it has been advised first to treat all these acute symptoms by rest in bed, with the head and shoulders low, light diet, *laxative* medicine, warm fomentations, warm injections, and if apparently necessary, leeches to the groins, and the internal use of such mild narcotics, as will, under ordinary circumstances of irritation, quiet the system.

TREATMENT OF DISPLACEMENTS.

Suppose the train of symptoms denoting engorgement, irritability, or displacement of the uterus, should occur in a patient at any time, what treatment should be adopted? If after a careful examination by the touch, of the parts concerned, prolapse or retroversion is detected, it should be reduced, if possible, at once, and if this do not afford the desired relief, let the patient be kept in a horizontal position on a bed or sofa for the requisite number of days, even if the time so occupied continue for several weeks, in order to give the parts an opportunity to recover their healthy condition, and as soon as the parts will bear

it, a proper pessary should be used to support it, if the vagina and the uterine ligaments have not sufficient tone to justify the hope that the recovery may be well secured without it.

When the acute symptoms have been relieved by rest or otherwise, what is mostly necessary to complete the cure or afford permanent relief to the displacement, while the patient is recruiting her general health by exercise? Such mechanical support as will retain the uterus in its proper situation until the general health becomes restored, and the ligaments of the uterus acquire their natural tonicity.

PESSARIES.

What is the general history of the artificial means of support for the uterus? From the earliest records of medicine, instruments called pessaries have been in use. They have been composed of various medicated substances, which have been supposed to exert resolvent, or softening, or astringent, or tonic influences upon the parts with which they were placed in contact. In most cases, recently, they are used for the purpose of affording mechanical support to a prolapsed vagina, bladder, or uterus.

Of what is the pessary usually made? Of cork, covered with wax; of linen stuffed with hair, or wool, or oakum, and varnished; of sponge; of box-wood, ivory; of coiled wire covered with leather or gummed cloth; of caoutchouc bags or balls; of small bladders, or birds' craws filled with air; of eggshells from which the contents had been extracted; and various other materials which circumstances might seem to indicate or ingenuity invent. Some persons have sewed up tan in linen bags, soaked them in wine, and while so moistened inserted them into the vagina.

What are some of the varieties of form of the pessary? Globular, globe-depressed on one, or opposite sides; oblong, bung or biscuit-shaped, cylindrical, or cylindroidal, ovoidal:—indeed of almost every other

imaginable variety of shape, according to the supposed condition of the parts to which they were to be applied. Some have been made ring-shaped, others like an oval link of a chain; some of these have been thus oval with the conjugate diameter shortened, making it resemble the figure of the plane of the superior strait; others, oblong and curved on one of the planes or aspects, to look like the frame of a large shoe-buckle; while others again have been finished like a huge letter U, or bow of an ox-yoke, and curved upon one of its broad planes with a view to adapt such curvature to the natural axis of the vagina. Quite recently we have a ring made of watch-spring steel and covered with gutta percha, that it may be compressed into a long ellipse at the time of inserting it, and afterwards expand to the capacity of the vagina.

What are the materials of which the pessary should be composed whenever practicable? Glass, or silver well gilt, or pure gold.

What are mostly entitled to preference? 1. The common flat circular form. 2. The ring-shaped, with very thick edges. 3. The oval-ring, curved upwards at one or both extremities.

What is the objection to the globular pessary? 1. It is introduced through the osteum vaginæ with difficulty. 2. It does not always sustain the uterus in its natural situation. 3. It is often extremely difficult to remove it when it has been introduced.

What position should the round flat pessary occupy in the vagina? It should be parallel with the rectum, that is, its convex surface should be applied to the rectum, with its upper edge in the cul-de-sac of the vagina, and its lower edge upon the perinæum.

Is the uterus then supported in the direction of the thickness, or the diameter of the pessary? It cannot be effectually supported in any other than the direction of the diameter of the pessary.

In what way does the pessary appear to act in the support of the uterus? As a lever, of which the con-

vex surface rests upon the rectum as a fulcrum, and the muscles of the perinæum act at the lower edge, while the uterus is supported upon the upper edge.

Which form of pessary has been regarded as best for the support of a retroverted uterus? The oblong or elliptical ring pessary, which must be long enough to have one of its extremities go up behind the neck and under the body of the uterus, while the other end is supported by the perinæum, or by the pubes.

What class of pessaries are supposed to be best for females who have had many children, or those affected with irritable uterus, or those who have ulcerations upon the os uteri? First, the oval pessary; next, the ring pessaries with edges sufficiently thick to elevate the uterus from contact with the floor of the vagina.

What consequences may result from having the pessary too small? Both pessary and uterus may become prolapsed or retroverted.

What is to be said of the stem pessary, or the pessary resembling the stem and bottom of a wine-glass? It is usually too irritating to be useful.

What is the first thing essential to the successful use of the pessary? That the uterus be replaced in its natural situation, for without this the pessary will fail to answer the purpose intended.

MANNER OF INTRODUCING THE PESSARY.

What is the proper method of introducing a pessary? Frequently it is sufficient that the patient lie upon her left side, with her hips to the edge of the bed. It is usually more convenient for the practitioner that she lie upon her back, and in some difficult cases it is necessary that she have her hips brought to the foot of the bed, and her feet on chairs each side of the seat of the practitioner. The vulva is then to be well lubricated, and the posterior commissure so put upon the stretch by the index finger of one hand, as to dilate the orifice of the vagina.

The pessary also, well lubricated, is now to be introduced edgewise in the direction of the long diameter of the vagina, by making it press firmly upon the finger, which rests upon the posterior commissure, and taking care not to allow the upper edge to contuse either of the nymphæ, press firmly but gradually onward, until it has entered the orifice of the vagina —then observing that it turns over with its concave surface upwards—continue pressing upon its anterior edge till it is made to rest in the fossa in the perinæum behind the posterior commissure of the vulva, having its upper edge completely imbedded in the culde-sac of the vagina.

At what part of this operation does the patient experience pain? While the instrument is passing through the orifice of the vagina. It is usually instantly relieved, as soon as the pessary has fairly passed beyond this point.

Would it not be best to replace the uterus with the finger, before attempting the introduction of the pessary? It would always be best, and in those cases in which the finger is too short for carrying up the fundus in cases of retroversion, it is best to elongate it by carrying up upon it a flexible metallic bougie, with which the organ may be replaced.

What advantage can be gained by passing a finger into the rectum in these cases? The replacement may thus often be facilitated, but operations through the rectum are often very painful to the patient.

What instructions should be given to the patient, if she should feel that the lower edge of the pessary presses anteriorly? To insert the finger into the vagina, and press the instrument backwards and rather downwards.

What sensation does the patient usually experience after the pessary is properly placed? Sometimes, immediate relief; this however is not always the case for a few days. In some cases, moreover, it cannot be borne.

How long is it usually requisite for a patient to continue the use of the pessary? So long as it remains in its proper position without exciting irritation. Whenever it causes any considerable uneasiness, it will be proper to have it removed to be regilded, or to have a substitute of a different size.

How long may she usually wear a glass, or a gilt pessary without removing it? In general six months; at the end of which time it is usually necessary that she have it removed to be re-gilded, or to substitute one of different size, whether it be of glass or other material.

How are such pessaries to be kept clean in the vagina? By the use of injections.

What can be said of the elytroid pessary of Cloquet? That it is not found to answer the desired purpose.

OBJECTIONS TO PESSARIES.

What are some of the evil consequences which may result from pessaries? Irritation, inflammation, ulcerations of the vagina and orifice and neck of the uterus; when injudiciously employed, or unsuitably constructed, the neck of the uterus has become strangulated in the perforation of the flat pessary, &c.

What is probably the cause of the objections to the use of pessaries for the relief of prolapsus and other displacements of the uterus? The fact that they are often made of improper materials, unsuitable forms, and that those who insert them misapprehend the manner of application, and their mode of operation for the support of the displaced organs.

What should be done if the pessary be found producing any injury? It should be removed and its use entirely abandoned, or it should be substituted by one adapted to the case.

Is difficulty ever experienced in attempts to remove pessaries? So much difficulty has occurred in at-

tempts, in some instances, that various instruments have been brought into requisition to aid in the removal of them, as forceps, scissors, hooks of various kinds.

What simple instrument has been found successful in most of the cases in which the fingers alone proved insufficient? One about eight inches long, with a fenestrated curve at one extremity, to act as a sort of vectis, while the other end is made into a hook, as shown in

Fig. 137.



How may this instrument be used? The hooked extremity may be inserted into the opening of the flat or ring pessary, and be used to assist in withdrawing it when it has been properly turned upon its edge, with the point of the finger applied on the opposite sides and upon the end of the hook to guard it from injury to the patient. The concave surface of the curved extremity may be applied upon the superfice of a globular pessary, and by the aid of a finger may be employed in scooping the instrument from the vagina through the vulva.

PROLAPSUS OF THE UTERUS.

What are we to understand by *prolapsus* of the uterus? Its precipitation along the canal of the vagina.

How many degrees of prolapsus are there? Three. First—descent, where the position is slightly altered, without however any marked deviation of the axis of the uterus, but with the neck often bent a little forward. Second—precipitation or prolapsus, where the organ has descended low into the vagina, and has changed the direction of its axis, from a correspon-

dence with that of the superior strait to that of the cavity, or even inferior strait, with its anterior surface upwards. Third—procidentia, or complete prolapsus, where the organ with part or all of its appendages, has escaped the vulva, with its axis corresponding more or less to the axis of the whole body.

ORDINARY CAUSES OF THIS ACCIDENT.

What is the most common cause of prolapsus? Increased size and weight of the organ, particularly when accompanied by relaxation or elongation of the ligaments, and especially of the utero-sacral ligaments.

During what period of pregnancy is the uterus most likely to become prolapsed? Between the first and the fourth months, while the organ is heavy and yet not large enough to be supported by the bony structure of the pelvis; again, shortly after parturition, while the organ is still large and heavy, and the ligaments very much relaxed or elongated.

What ligaments are most important to the support of the uterus in situ? The utero-sacral, or posterior ligaments of the uterus.

What part does the vagina perform in the support of the uterus? Probably none at all; though in this respect obstetric anatomists differ in opinion.

What influence should the knowledge of the risk of accidents have upon our management of puerperal females? They, that is, any others than perhaps savages and very laborious women, should be kept in the horizontal position several days after parturition, until the uterus may have approached to its usual size, and the ligaments have regained their usual tonicity and degree of contraction.

What are the exciting causes of prolapsus, in single or unimpregnated women? Great muscular exertion, which sometimes induces it in strong girls; sudden and severe falls, constriction of the upper portion of the

body, and consequent pressure upon the intestines, and through them upon the pelvic viscera, as produced by tight lacing, severe straining to relieve constipated bowels, &c.

What is the ordinary mode of treating prolapsus uteri? That which was alluded to under the head of displacements generally—astringents conveyed into the vagina, pessaries, &c.

What surgical means have been devised for the radical cure of procidentia uteri? The removal of a portion of the mucous membrane of the posterior or anterior part of the vagina, then bringing the edges together, so that by their adhesion the vagina may be diminished in size.

BANDAGES AND COMPRESSES IN DISPLACEMENTS OF THE UTERUS.

What is the modus operandi of most of the bandages now in use professedly for prolapsed uterus? They compress the inferior part of the abdomen, and may be properly called abdominal supporters; but at the same time, they either force down the small intestines into the cavity of the pelvis upon the uterus, or by the firm pad placed in front of the abdomen, and directly above the pubes, they form such a plane as to cause the abdominal viscera to descend into, or towards the pelvis, when pressed upon from above by the diaphragm and other respiratory muscles.

What is the effect of the perinæal pad and straps? They contribute in conjunction with the circular band, to subject the uterus to more or less compression, in consequence of its pressing up the perinæum to the orifice of the uterus.

With what other displacement of the uterus may prolapsus be confounded? With antero-version, antero-flexion, latero-flexion, retro-flexion, and partial, or even complete retroversion.

ANTEVERSION OF THE UTERUS.

What is meant by the term *anteversion* of the uterus? That condition of the uterus in which its body and fundus are thrown forward against the bladder.

Is this of frequent occurrence? It is believed to be rare, and especially in the unmarried female.

What symptoms does it produce? Several of those attendant upon prolapsus and retroversion, but especially does the patient complain of sense of pressure against the bladder; sometimes this feeling is so strong as to have given rise to the idea that calculus existed in the bladder.

What attempts are to be made to remove the cause of such distressing symptoms? The indications are to restore the displaced fundus to its proper situation, and retain it if possible by a well adjusted pessary.

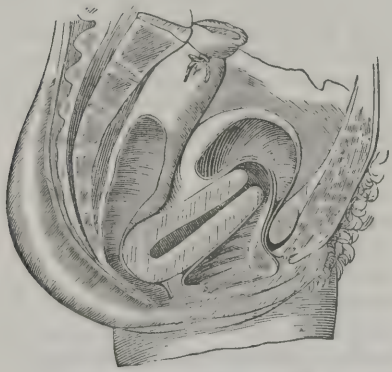
Does this displacement of the uterus appear to exert any influence over the susceptibility for impregnation, or the capability of the uterus to fulfil its office as a gestative organ? Since deviations from the normal positions of the uterus, generally more or less modify the susceptibility for impregnation, mostly diminishing it, and sometimes destroying it altogether, it is probable that anteversion is often unfavorable to the necessary contact of the two germs; and it is known that in some cases the woman was subject to successive abortions until after the anteverted uterus had become permanently restored to its proper relation with the vagina, and other pelvic viscera.

RETROVERSION OF THE UTERUS.

What is meant by the term *retroversion* of the uterus? Retroversion consists in the turning of the womb backwards into the hollow of the sacrum, so that its anterior face looks towards the concavity of

that bone. While its orifice is carried towards the top of the symphysis of the pubes, so that its inverted axis is nearly or quite in the relation with the axis of the superior strait of the pelvis,—its posterior face is made to come in contact with the posterior surface of the vagina, and its fundus and nearly all its body is depressed into the cul-de-sac of the pelvic peritonæum. See fig. 138.

Fig. 138.



SYMPTOMS OF RETROVERSION OF THE UTERUS.

What symptoms does this displacement usually produce? In nearly every respect they are the same as arise from prolapse of the uterus. In many of the cases the patient, with strong desires, can pass no urine at all, or at best usually only a few drops at a time.

What circumstances may complicate this diagnosis of retroversion? The existence of tumors in the sub-peritonæal cellular tissue, or the descent of an ovary into the cul-de-sac below the utero-sacral ligaments.

PARTIAL OR INCOMPLETE RETROVERSION.

Is there not a less considerable displacement of the

body of the womb backward, still accompanied by many very annoying and distressing sensations? Some patients are afflicted with what has been called a partial retroversion or tilting backwards of the uterus; the ligaments are put less considerably upon the stretch, and the bladder and rectum probably less severely pressed upon; but it would seem to be proper to regard this kind of displacement a prolapse rather than a retroversion of the organ.

CAUSES OF RETROVERSION OF THE UTERUS.

What are some of the prominent causes of retroversion of the uterus? Too great a distension of the bladder, too severe and long continued compression of the abdomen by tight lacing; sudden shocks to the system by falls, leaping, dancing, carrying great weight, &c.

TREATMENT OF RETROVERSION.

How should you reduce retroversion of the non-gravid uterus? Evacuate thoroughly as possible the bladder and the rectum. Place the patient on her left side in bed, properly covered, with her hips easily within reach, lubricate the index finger, and carry it into the genital fissure till it reaches the tumor in the lower part of the pelvis, then pass it slowly and steadily upwards if possible, till it reaches as far as the finger can carry it; if this attempt be successful, transfer the finger to the os uteri, and as gently carry it backwards till it is restored to its proper relation with the axis of the superior strait.

If this plan fail, in what other attitude of the patient would it be best to repeat the attempt at reduction? Request the patient to place herself on her knees on the bed, and to bring her chest as much as possible in contact with it.

What instruments have been proposed to aid in replacing a retroverted uterus? One by Professor Meigs, and two, a simple and compound one, by Dr. H. Bond.

PROFESSOR MEIGS' INSTRUMENT.

What does Dr. Meigs in his "Letter to his Class" say respecting the use of instrumental means in replacing a retroverted uterus? He there states, that it sometimes happens that the surgeon cannot succeed with two fingers of the right hand, in carrying the retroverted uterus so far upwards along the course of the sacrum, as to compel it to rise above the promontory of the bone, and thus be set at liberty from its imprisonment in the lower basin of the pelvis. In order to effect this, the fingers are required to be longer than the usual length. By means of the little instrument of which fig. 139 is a representation, you will

Fig. 139.



be enabled to carry it much farther than with the fingers. The instrument is made of steel, and it is conveniently curved to suit the form of the back part of the excavation. Conducted along the left indicator finger, to the cul-de-sac, behind the vaginal cervix, it may be pressed against the overset womb, which is readily pushed upwards by it. It is also a convenient instrument for drawing down the cervix from the pubes; that part of the organ being taken hold of by the ring. The whole instrument, from the top of the ring to the end of the handles, is just eleven inches in length.

DR. HENRY BOND'S INSTRUMENT.

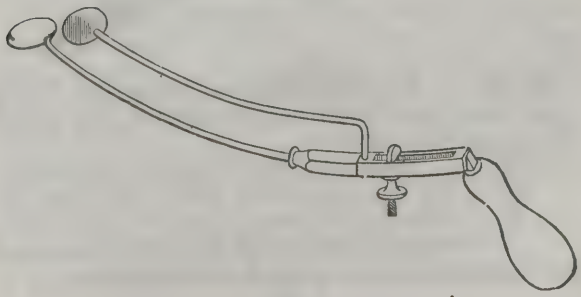
What are Dr. Henry Bond's description and illustration of an instrument called by him the "Uterine Elevator," with which he has several times succeeded in replacing retroverted uteri when other means had

failed? The instrument consists of two blades—the *anal* and the *vaginal*—and of a clamp-headed screw and nut to fasten them together. The anal blade, including the body and the stem, is about 9 or 10 inches long, and made with the curvature of a radius of about 8 inches. The body of this blade, to which belongs the handle of the instrument is about 3 inches long and made square. Upon this the other blade rests firmly, or slides, as circumstances shall require. The vaginal blade, curved upon a radius of about 7 inches, has a large groove two inches long, exactly fitted to receive the body or square part of the other blade, so as to slide upon it, and to retain a firm attachment by means of the screw. The groove has a fenestra through its upper side, an inch and a quarter long, and wide enough to give passage to the screw, when this is placed longitudinally. That part of the screw which is within the fenestra, when the blades are attached together, is square, so as to prevent its rotation while the nut is turned.

Each blade terminates in an ivory tip. That on the anal blade is oval, an inch and a half long and five-eighths of an inch in diameter. The steel stem of the blade is bent so as to be inserted into the end of the tip, and, at the point of insertion, it has a joint, allowing the tip (when it is introduced or withdrawn per anum) to be thrown out so that it pass in and out endwise. The ivory is cut away or grooved so as to give lodgement to the stem, presenting no salient point. The joint should be made to work freely; and after the tip has passed the anus, it will very readily assume its proper transverse position, and be as firm and steady as if it had been riveted on, without any joint. The ivory tip on the vaginal stem is oval, about ten-eighths of an inch in length and five-eighths in diameter, approaching nearly to a cylinder with spherical ends over. The distance between the tips and the junction of the blades is about six and a half inches.

What are the directions for the manner of using it? In using the instrument, detach the blades from each other; introduce the anal tip into the rectum, then the other tip into the vagina; then fasten the blades together by means of the screw. Be particular to keep the blades parallel with the axis of the pelvis, and never thrust or pass them forward with a rash inconsiderate haste. By means of the slide of one blade, upon the other, the tip of the vaginal blade may be placed higher or lower, as circumstances may require. If the fundus uteri has sunk low between the vagina and rectum, shove up the moveable blade, so that the two tips may be nearly on a level. In this position of the tips, it is intended that the space between them shall be only sufficient for the vagina and rectum, without pressing them—a space not exceeding three-eighths of an inch. If the fundus does not lie low, or if the instrument has been shoved up as high as the vagina will easily admit, loosen the screw, and, without allowing the vaginal blade to retreat, carry up the anal blade in such a manner as to throw the fundus forward into its normal position. The instrument described may be called the *Double Uterine Elevator*, and is adapted to the most difficult obstinate cases. Fig. 140, reppresents the double elevator, with the blades attached together.

Fig. 140.



What does he say about the "Single Uterine Elevator?" In a large majority of cases of retroversion and retroflexion, the *Single Uterine Elevator* sufficiently meets the indication. It consists of a shaft or stem about seven or eight inches long, with a suitable handle on one end, and the other end finished with an ivory tip and a joint like that on the anal blade, just described. The stem should be slightly curved, so as to correspond with the axis of the pelvis, but the handle and two or three inches of the stem next to it should be bent in an opposite direction, so that when the instrument is introduced into the rectum, the handle of it should not interfere with the edge of the finger in the vagina at the same time. It is confidently asserted that these single elevators will be found more efficient and more safe in all these cases, where Dr. Simpson's sound is used to ascertain and rectify the position of the uterus.

Fig. 141, represents the single elevator, with the tip put in a position to be passed through the anus.

Fig. 141.



Fig. 142.



Fig. 142, exhibits a direct view of this tip, and its position after it has passed the sphincter.

What treatment is usually required after the retroverted uterus has been restored to its proper position? In recent cases, if the tone of the pelvic viscera and the muscular system is good, it is rarely necessary to

do more than to have the patient keep her bowels in an open state, empty her bladder seasonably, and avoid any active exercise for some days. But under almost any other circumstances, it will be necessary for her to wear a pessary to support the organ, for some, and perhaps for a long time.

RETROFLEXION OF THE UTERUS.

What other peculiar condition of the uterus is there, in which the body may be carried more or less backward? Retro-flexion, in which the uterus is bent backwards upon itself, in such manner that the mouth and a portion of the neck may have their usual direction, while the fundus, body, and part of the neck are so bent backwards as to form an angle with the inferior portion.

Is it an affection easily to be managed? In general it is not; it is probable that it often depends upon some mechanical cause, as the pressure of impacted feces in the sigmoid flexure of the colon, the presence of ovarian or other tumors, &c.

TUMORS IN, OR SPRINGING FROM, THE UTERUS.

To what part of the uterus may the more solid tumors be attached? Some spring from the outer surface under the peritonæal coat, others on the inner surface, and others again have their origin in the substance proper of the organ.

What is the character of these morbid growths? Sometimes they appear to be purely fibrous, sometimes encysted, that is, having a fluid, mucous, serous, puruloid, or tubercular matter in the centre, or in several foci, surrounded by a fibrous envelope. Sometimes again they appear to be entirely fleshy, and at some others they are calcareous or osteo-sarcomatous.

NOT ALWAYS EASILY DIAGNOSTICATED.

Is the presence of tumors within the uterus, always

easily diagnosticated? It is sometimes very difficult to do so. It has however been observed, that in many of these cases the uterus seems to be elongated to such a degree as to admit of the introduction of a female catheter or sound nearly its entire length into its cavity.

What sensations does the patient usually experience, when the tumor becomes so large as to rise above the superior strait of the pelvis? The mechanical inconveniences which usually attend pregnancy arrived at the same degree of developement—the general health may be good.

By what means is it to be distinguished from pregnancy? By auscultation and ballottement.

Is it easy to discriminate between the existence of tumors in the uterus, and those in the ovaria, or either of these from extra-uterine fetation? The diagnosis would be in general difficult.

What consequences may result from inflammatory action in tumors, otherwise quiescent, and producing little irritation? When such tumors become the seat of inflammation, more or less rapid changes in their structure may take place, and serious results may follow.

TREATMENT OF TUMORS OF THE UTERUS.

What treatment should in general be employed? Those which are palliative, or simply discutient, as the iodine, cicuta, tartar emetic by inunction, &c. Attempts at removal by the knife would in general be improper.

By what means may the distressing sense of pressure upon the rectum, and neck of the bladder be relieved? Occasionally by the use of suitable pessaries.

POLYPUS OF THE UTERUS.

What name is given to the pediculated tumors which spring from the uterus? Uterine polypi.

What is their general character? They are mostly fibrous, smooth to the touch, and very vascular, and covered by a smooth membrane. Some are more of a mucous character, and others again are hard and glandular in structure; those partaking of this particular formation, are thought most frequently to spring from the glandulæ nabothi, about the neck of the uterus.

What portions of the uterus do they generally spring from? From the mucous membrane of the cavity, of the body, of the neck, and from the orifice of the uterus.

What symptoms usually accompany uterine polypi? They are very various—mostly they are those of a nervous character, none of which are pathognomonic. There is mostly leucorrhœa, sometimes dysmenorrhœa, menorrhagia, and almost always a sensation of prolapsus.

With what other affections of the uterus have polypous tumors been confounded? With pregnancy, with prolapsus, with retroversion, and more readily than with either, chronic inversion of the uterus.

How is it to be distinguished from pregnancy? It can be confounded with pregnancy only when the tumor is formed and retained within the cavity of the uterus, but then the constancy or frequency of the discharge, together with the patulous orifice of the uterus, should clear the diagnosis, or at least determine that true pregnancy does not exist.

How can we discriminate between polypus and prolapsus, or retroversion of the uterus? First: By the character of the tumor when it is a prolapsus, the shortening of the vagina, and the recognition of the descent of the body, upon examination through the rectum; and also, the situation of the os tincæ. Second: From retroversion, because in this sort of displacement, the orifice of the uterus, is thrown

strongly forward, and no pedicle can be recognised by the finger in the vagina or rectum.

From what peculiar condition of the uterus is it very difficult to distinguish it? Chronic inversion of the uterus. The distinction must be based partly upon the history of the affection, and the result of a careful physical examination.

TREATMENT OF POLYPUS OF THE UTERUS.

What class of uterine tumors call for and admit of removal by surgical means? Those which are pediculated, as polypus, and as cauliflower excrescences.

Which is the better and the safer mode of removal, by the knife or scissors, or by the ligature? In a large majority of cases by the ligature.

Is it always easy to cast a ligature upon a polypus whose pedicle is within the os uteri high up in the pelvis? The embarrassment is such that very many devices have been proposed to enable the surgeon to accomplish the operation, and it is probable that the double canula of Gooch is the most useful.

INFLAMMATION OF THE GENITAL ORGANS.

How are we to study or regard inflammatory affections of the organs of generation in the female? In relation to the tissue which is affected. Thus, in inflammation of the mons veneris the effects of the disease are modified by the density of the structure; hence when it suppurates, the pus being bound down, burrows more or less as though under a fascia.

In what respect does inflammation of the vulva differ from that of the mons veneris? This structure being much less firm, great tumefaction from sanguine congestion and edema are apt to follow. Suppuration also takes place more readily.

With what is common inflammation of the vulva often complicated? With an aphthous eruption, as seen sometimes in the mouths of young children.

What class of females are subject to inflammation of the uterus? It is liable to occur in single as well as married women, and in the pregnant and non-pregnant condition.

What is it called when it attacks the substance of the uterus? Hysteritis, or metritis.

HYSTERITIS OR METRITIS.

To what grades of inflammation is this organ liable? As most others, to acute and chronic inflammation.

What are some of the causes of metritis or hysteritis? Blows, falls, sympathetic irritation in other organs, violence to the uterus during parturition, &c. The causes which produce dysmenorrhœa, also sometimes give rise to metritis. The uterus may also become inflamed from the application of syphilitic virus applied directly to it, or it may have been indirectly communicated along the vagina.

To what other specific inflammation is the uterus liable? To gout or rheumatism.

SYMPTOMS OF METRITIS.

What symptoms accompany metritis? Chill, fever, pain in the back, but particularly in the hypogastrium. The bladder is irritated and little urine can be retained, great pain is experienced in any attempt at motion; when the attack is severe the patient is obliged to lay down upon the back, have the legs drawn up to take off all pressure from the affected part. In the milder forms there is less pain, and little or no sympathetic sign of the local affection.

What condition of the parts is found on physical examination? Vagina and uterus hot, the uterus thickened, hard, congested, heavy, and painful to the touch.

MODES OF TERMINATION OF METRITIS.

What are the varieties of termination of metritis? Resolution, abscess, chronic inflammation, induration, and ramollissement or softening.

What is the general character of induration of the uterus? First: The whole uterus, with its neck, is large. Second: The organ may frequently be felt above the pubes, regular in shape, and little if at all, sensitive to the touch. Third: Balanced upon the point of the finger it feels heavy, and by this weight in the vagina it causes the sensation of prolapsus.

Does this induration pass speedily into any other form of disease? It often remains stationary for a long time, even during the balance of life without injury to the patient.

Is it always free from morbid sensibility, when in this indurated state? It is not; on the contrary, it sometimes remains irritable for days, weeks, and even years, and this irritation, as has been said already, is sometimes kept up by the displacement of the organ, whether it be prolapsed, or retroverted.

Are the functions of menstruation and reproduction necessarily interfered with by the occurrence of induration of the uterus? Patients may continue to menstruate, but if they become pregnant, they will be likely to abort.

Is ramollissement or softening of the substance of the uterus usually extended to the entire organ? It is perhaps altogether a rare mode of termination of inflammation, but when it does so occur, it is more frequently confined to a part, than extended to the whole organ.

ABSCESS OF THE UTERUS.

What parts of the uterus may be the seat of abscess? Sometimes it occurs in the substance, and points towards the cavity of the abdomen or pelvis, sometimes it opens upon the inner surface of the uterus.

When the abscess points towards the external surface of the uterus, what process is usually commenced? The serous membrane, viz.: the peritonæum, usually suffers from local inflammation which results in adhesion, and thus a cyst is formed which contains the effused pus until ulceration is effected into the rectum, and the matter passed off per anum; or the coats of the bladder are perforated and the pus escapes with the urine, or an opening is made between the vagina and bladder, or between the uterus, vagina, and rectum; or lastly, and least frequently, a perforation is made through the cyst into the cavity of the abdomen, and fatal peritonitis is induced.

What is the prognosis of abscess in the uterus? Mostly, unless the abscess open into the cavity of the peritonæum, life may be preserved, though the patient's health may remain a long time impaired.

TREATMENT OF ACUTE METRITIS.

What treatment is appropriate to acute metritis? One strictly antiphlogistic, as venesection, saline cathartics, antimonials, local blood-letting, low diet, perfect rest, and some active revulsives, as fomentations, blisters, &c., &c.

What is to be said respecting the use of cold or astringents? That though useful in some stages of the disease, they are entirely inadmissible in rheumatic or gouty constitutions.

If the inflammation terminate in induration, how is it to be treated? Attempts are to be made to discuss it by the use of remedies believed to act powerfully as discutients, as small and repeated doses of mercury, in the form of calomel, blue pill, or corrosive sublimate. By many the cicuta has been thought to act in this way, and latterly the Lugol's solution of iodine, in doses of from eight to ten drops, three times a day, has had some reputation for this purpose.

Is it necessary to confine the patient to her bed for the discussion of the induration? Freedom from excitement should be secured to her, but often she may be permitted to move about while under treatment, provided the heavy organ be supported upon a pessary.

What train of symptoms would indicate the termination in suppuration? A continuance of the pain, with constitutional irritation, together with a sense of throbbing in the part.

What particular portion of the uterus is most liable to inflammation? That part which dips into the vagina, or the neck and mouth of the uterus.

What are some of the numerous causes of inflammation of this part of the uterus? 1. Extension of inflammation from the mucous membrane of the vagina—hence it is often connected with vaginitis. 2. It is sometimes caused by the os tincæ dropping down into, and becoming strangulated in the orifice of a flat pessary; mechanical shocks, as violence in coition, &c.

What symptoms usually accompany inflammation of the neck of the uterus? They are similar to those of mild metritis, as pain in the back, heat and weight in the pelvis, &c.

What evidence can we have that the inflammation is confined to the neck, and does not involve the body? The neck is found tumid, and the body not so, when examined by the touch.

What are some of the terminations of inflammation of the neck of the uterus? In resolution, in induration, in scirrhus, in ulceration both simple and malignant.

ULCERATION OF THE UTERUS.

How are we to distinguish simple from syphilitic ulceration of this part? Simple ulceration is said to have smooth regularly defined edges, while those of the specific character have irregular margins.

What varieties of simple ulcerations may affect the neck? 1. Simple ulceration of the mucous membrane,

resembling an abrasion of the mucous surface. 2. One in which there are deposites of small patches of lymph, as aphthæ, &c.

How is the corroding ulcer to be distinguished from either of these varieties? By the fact that it digs out the internal surface of the mouth and neck of the uterus and is constantly extending by the process of ulcerative absorption.

Can simple ulcerations always be recognized by the touch? They cannot; it is rarely safe to rely upon the touch for a knowledge of their character.

BEST MODE OF RECOGNITION—SPECULUM.

How then are they to be recognized? By means of a speculum or well adjusted tube, passed so adroitly into the vagina, as to enable the eye of the practitioner to *see* the part affected, and thus derive more accurate knowledge respecting it.

What variety of speculums are there, and of what materials are they composed? They are made of glass, or of some of the metals. Some are complete tubes, either cylindrical, or somewhat conical—consisting of a single piece—such are composed of glass, pewter, or the mixed metals. Others are so divided that they operate with handles upon a hinge, and resemble a tube cleft longitudinally, with a pivot so adjusted that the two extremities of the blades can be more or less widely separated. Others are so constructed as to consist of three equal blades, so adapted as to move upon each other, and thus to be passed into the vagina while folded up, and afterwards expanded, to bring the orifice of the uterus into view.

Which variety of those now in use is probably best adapted to most purposes for which the instrument is required? The quadrivalve instrument, which is so constructed that it enters the vagina in a small compass, yet it is capable of great expansion when necessary, by compressing the two handles.

How is the speculum to be introduced? When no

great precision in the examination is requisite, the patient may be placed on her left side, close to the edge of the bed—or what is to be preferred, she may be placed on her back, with her feet resting at the end of the bed, and the breech brought down to her heels. If, however any careful investigation of the condition of the os tincæ is necessary, it becomes almost indispensable that the hips should be brought upon the edge of the bed, elevated by a pillow or some suitable padding, while the feet are extended upon chairs or suitable supports outside of the bed. The patient's limbs should be properly covered with drawers, and over all should be placed a sheet or blanket, having in the central seam an orifice ripped sufficiently large to receive the instrument as far as to the handles. The examinator is then to be seated or stationed between the knees of the patient, while the instrument, well lubricated, is to be passed by one hand through the orifice, as far as to the handles or base. The vulva is also to be well lubricated by the other hand, one or two fingers of which are to be passed into the orifice of the vagina, to press back the perinæum. As soon as the posterior commissure of the vulva is put sufficiently upon the stretch, the point of the instrument should be carried down upon the back of these fingers, which should thus form a plane, along which the *embout*, or rounded wooden extremity of the speculum, can be guided over the posterior surface of the vagina. This done, the fingers are to be withdrawn, and that hand called to aid the other in cautiously passing the speculum onwards in the axis of the vagina to the cul-de-sac behind the uterus. The handles may then be carefully pressed towards each other, when the *embout*, becoming disengaged, is forced out by the spring contrived for the purpose, and thus leaves the upper portion of the vagina accessible to the eye of the examinator.

What kind of light is best adapted to the purpose of such examinations? Clear daylight is to be pre-

ferred: but a bright moveable light, such as a free burning lamp or candle will mostly answer the purpose very well.

What obstructions may prevent the ready discovery of the state of the parts? A greater or less quantity of tenacious mucus, or even coagulated blood, may be attached to the surface of the os tincæ. This must be wiped off by a mop made of fine sponge or charpie, or washed away by a detergent injection.

TREATMENT OF ULCERS OF THE OS TINCÆ.

What is the proper treatment of ulcers of the os tincæ? Depletory, while any marked inflammatory action exists—then astringents, and for the mucous ulcerations the nitrate of silver, either in substance on a port caustique, or in proper solution, and applied by means of a camel's hair pencil.

Is it essential that the patient should be kept at rest during the treatment? If possible, the patient should be kept at rest, and pressure should as much as possible be taken from the uterus. Where, however, quietness is impracticable, the patient should have the ulcerated surface of the uterus isolated from the mucous membrane of the vagina, by the use of a properly adjusted pessary. The dressings or washings can then be applied with better effect.

Are dressings to the os tincæ of easy application? They can rarely be properly applied unless through the speculum, previously introduced, to bring the affected part into view.

Is it important that an accurate distinction be made between pure inflammation of a part, and irritation and disorders of function merely? It is highly important, as the therapeutic indications are essentially different in many of these cases.

MALIGNANT ULCERATIONS OF THE UTERUS.

What is meant by the term phagedenic or corrosive ulcer of the mouth or neck of the womb? That va-

riety of ulcers which is constantly extending by the progress of ulcerative absorption.

Is it proper to regard this as always malignant and incurable? It is mostly sufficiently malignant in its character to produce serious, and generally fatal inroads upon the constitution, but it is sometimes amenable to appropriate remedies.

In what class of females does it usually occur? In those of a lymphatic temperament, and who have passed the menstruating period of life in most, but not in all cases.

Is its existence generally recognized early after its commencement? As it is usually not attended with very severe pain, the patient ascribes the discharge which attends it to too frequent a menstruation, or if she be passed this period of life, she thinks menstruation has returned.

What sensations are usually experienced by those who have this disease? Principally a sense of weight, bearing down, as occurs in prolapsus or other displacement.

DIAGNOSIS OF MALIGNANT ULCER.

What condition of the uterus, &c., is to be recognized by the finger in the touch in such cases? The circumference of the neck is found enlarged, and the orifice very considerably so—it seems to be infundibulated or *dug out*—sometimes the fingers will pass readily to the internal os uteri.

Is the body of the uterus moveable or fixed in these cases? It is usually quite free and moveable—sometimes it is a little engorged. The neck only or the internal surface being implicated.

Can an accurate diagnosis be obtained by the touch alone? No, the sense of sight through the medium of the speculum becomes necessary to recognise to the fullest extent the alterations which have taken place.

What influence does this affection exert upon the constitution of the patient? Although it is usually

attended with very little pain, yet sooner or later the patient becomes reduced to a state of great feebleness and prostration. The absorption of the vitiated secretion produces hectic fever, great emaciation, followed by edema, &c.

What parts become subsequently involved in the erosive process which is going on? The bladder, or rectum, or both, become opened so that the urine escapes by the vagina; or in the event of the rectum being ulcerated, the feces pass by the same route.

TREATMENT OF MALIGNANT ULCERS OF THE UTERUS.

What precautionary measures are to be adopted to prevent an aggravation or rapid extension of the disease? The constant use of detergent injections into the vagina, and perhaps into the uterus itself, with a view to remove as effectually as possible all the matter as fast as secreted.

What local medicines may be used? Those of an astringent character have generally been thought proper, after a due ablution of the surfaces with bland mucilages, or simple warm water; thus the sulphate or acetate of zinc, in the proportion of one, two, or three grains to the ounce of water, may be thrown up by a syringe, or carried upon charpie, through the speculum by some suitable instrument. The solution, or solid nitrate of silver and various other escharotics have also been used in such cases.

Is it proper to rely upon local treatment alone? It will be highly important to attend to all the hygienic measures which improve the general health.

In regard to the use of injections into the cavity of the uterus, how, and by what means should they be introduced? Unless there be a reliable nurse in attendance the practitioner should always apply them, and that if possible two or three times a day. The mucilage of flaxseed, slippery elm, pith of sassafras, starch or barley, should be carefully strained, and then conveyed through a gum elastic catheter, the

eyelet end of which should be first carefully introduced upon the point of the finger into the cavity of the uterus, and so retained by the hand of the patient or a proper assistant, that it be not driven forcibly against the walls of the uterus when adapting the pipe of the syringe to it: or a silver tube curved into the proper shape may be substituted, and to this the syringe when charged may be so fitted as to pass up the whole contents into the cavity of the uterus. This operation with whatever kind of instrument, should be conducted with great care, as not only the instrument improperly introduced may do much injury, but there is some danger of forcing the fluids along the fallopian tubes into the cavity of the peritonæum, and thus causing fatal peritonitis.

CANCER OF THE UTERUS.

Is cancer of the uterus a very common disease? In this country it is believed really to be one of very rare occurrence, though there are many affections of the uterus which are ascribed to cancer, and yet are not carcinomatous.

What portion of the uterus is most liable to be attacked with cancer? The neck.

What is the usual mode of attack of cancer? The parts become the seat of irregular induration of a scirrhous character, being more nodulated, harder and more dense and painful than simple induration; one lip is mostly sensibly larger than the other.

What is usually observed in regard to the vagina in these cases? That it is more or less shortened, and sometimes adherent to adjacent parts. The same may be said of the uterus, which is usually found immoveable, being bound down to the blader, or rectum, or both.

What is subsequently observed in respect to the march of the disease? Sooner or later, corrosive ulceration with hemorrhage from the surface which is sometimes studded by a fungus growth takes place.

The patient also experiences deep seated lancinating pain, (which is generally, though not uniformly pathognomonic of cancer,) and after a time the nervous system suffers severely, while sooner or later the aspect of the patient changes: she loses the solidity of muscular and cellular tissue, she may previously have possessed, and substitutes for it a straw colored surface, with more or less edema of the whole cellular membrane.

TREATMENT OF CANCER OF THE UTERUS.

What should be the treatment of cancer of the uterus? At the very incipient stage, it should be antiphlogistic; after it has made some progress, we can do no more than palliate by keeping the system constantly under the influence of cicuta, hyosciamus, &c., though sooner or later, we are generally compelled to use opium in some form or preparation, in gradually increasing doses, to keep up a degree of narcotism. By these means, the action of the disease is sometimes arrested in its early stage, and its development retarded for a greater or less length of time. When ulceration occurs, the same care should be taken to wash away the vitiated secretions.

What is to be said respecting the propriety of amputating the neck of the uterus? Although this operation has been frequently practised in Europe, in cases of real or supposed cancer, the recorded results are not sufficiently favorable in cases of true carcinoma as to gain our approbation for the practice. The diagnosis of the disease while strictly confined to the inferior portion of the neck, is not sufficiently clear to justify an indiscriminate resort to it; and further, when it has become clearly developed, the parts above the reach of the knife are so often invaded by the same disease, that little or no benefit could arise from the cutting away of a portion only of the disease.

CAULIFLOWER EXCRESCENCE OF THE UTERUS.

What other morbid formations are liable to take place in or about the uterus? Cauliflower excrescence, fibrous tumors, polypi, moles, and osteo-sarcomatous tumors.

What is the nature of cauliflower excrescence? It appears to be composed of a tissue of vessels bound together by slight attachments of cellular membrane, and covered by a smooth but very fragile envelope of the same character; to the touch it feels like a fungus or cauliflower, whence the English name. When exposed to the eye, it displays a bright arterial color.

What is its general texture? Very slight, it is ruptured by slight pressure, the touch of a finger, or the point of a syringe, or even the contractions of the vagina, or pressure of the perinæum upon it; hence it readily pours out a great deal of serum and very often some blood, and thus drains the patient. In some instances, its texture is more firm.

What proofs have we, that it consists almost entirely of vessels of the most delicate texture? Immediately after death it is found completely collapsed, with scarcely a vestige of its character while living, and when strangulated by a ligature, the same thing is observed. When the ligature comes away, there is usually only a half putrid membranous mass detached by it.

What is its usual point of origin? The neck or orifice, though sometimes the cavity of the body of the uterus.

What period of life is most incident to it? Though of rare occurrence, it may attack at any period of married or single life.

What influence does it exert upon the health of the patient? The constant drainage to which she becomes subject, sooner or later, renders her anemic, gives her a pallid, or straw colored appearance: it is also usually

accompanied by more or less edema, and other evidences of debility.

With what other diseases may this cauliflower excrescence be confounded? With polypus, and the fungus which sometimes springs from a cancerous base in the uterus.

What is the prognosis of cauliflower excrescence? It is generally unfavorable.

What treatment has been proposed and adopted for it? Astringents of various kinds; and in using these to avoid the rupture of the surface of the tumor it is proposed to have the patient's hips elevated, and then pour the fluid into the vagina from a suitable vessel.

TREATMENT OF CAULIFLOWER EXCRESCENCE OF THE UTERUS.

Has any surgical treatment ever been resorted to, for its removal? The ligature has been applied to its base for that purpose, and its removal has thus been accomplished. The os uteri has also been ablated.

What should be applied to the base of the tumor after removal, to prevent its return? The nitrate of silver, or what Churchill has regarded better, the butter of antimony, through a speculum.

PHYSOMETRA.

What do you mean by the term physometra? Tympanitis uteri, or a distension of the uterus by a quantity of air supposed to be secreted within its cavity.

Does the mucous membrane of the vagina probably ever secrete air also? It is believed that it sometimes does, as some females have these discharges of air per vaginam only when in the unimpregnated state, and others when pregnant.

Is it ever attended with any serious consequences? Not when it passes off readily, which it does do sometimes with considerable noise; but when it is confined within the cavity of the uterus, the patient suffers more or less from distension.

Upon what condition of the system, does it depend? Some suppose it dependent upon a low degree of inflammation of the mucous membrane; others ascribe it to some peculiar condition of the nervous system, which presides over the secretory processes.

How is the distension of the uterus from this cause, to be distinguished from pregnancy? By percussion, auscultation, and ballottement: 1. Percussion produces a resonance which cannot be perceived in pregnancy. 2. Auscultation in this case, cannot detect the sound of the fetal heart, &c. 3. Ballottement, cannot recognise the existence of a body moveable in a fluid, within the cavity of the uterus.

TREATMENT OF PHYSOMETRA.

What treatment is to be used in these cases? There is no specific remedy known for this affection: if the air do not pass off under contraction of the uterus, or by the shock of the abdominal muscles, by coughing, or otherwise, it may be necessary to dilate, or perforate the os uteri, and allow the air to pass through a catheter, or canula; after which, it has been proposed to apply to the inner surface of the uterus, solution of nitrate of silver, or some preparation of iodine, &c., with the view to alter the condition of the surface which gives rise to this secretion: particular regard should be had to the healthy condition of the general system.

HYDROMETRA.

What do you mean by the term hydrometra? Dropsy of the uterus, from an accumulation of serous, albuminous, or muco-purulent fluid, within its cavity.

Is this condition easily diagnosticated? It is not, being easily confounded with pregnancy,—having a similarity of sympathetic signs, though the stomach is said usually to sympathize less than in pregnancy.

What physical examination is best adapted to clear

the diagnosis? Ballottement, by which the uterus is found to contain a fluid, but having nothing moveable suspended within it. Auscultation, moreover, detects no sounds of the fetal heart.

What treatment is proper for hydrops uteri, or hydrometra? A general diuretic treatment might be somewhat useful, but it is mostly necessary to perforate the uterus, by a stilet or catheter in its orifice, or pass a trochar and canula into some part of the neck which can be reached by the vagina.

Should we regard dropsy of the uterus, as a dangerous complaint? It should be so considered, but chiefly from the morbid action going on in the inner surface of the uterus, and its liability to ulceration through its walls into the cavity of the abdomen.

DISEASES INCIDENT TO PREGNANCY.

Do the sympathetic or secondary disturbances of the system during pregnancy, sometimes amount to disease? Yes, and are entitled to be called the diseases of pregnancy.

Into how many classes may these diseases be divided? Into local and general.

In what way are the local diseases induced? By pressure and sympathy.

What are some of the consequences induced by enlargement of the uterus? Pressure on the neck of the bladder, which prevents a free discharge of urine, and often causes distension.

What consequences may result from this distension? Retroversion of the uterus, inflammation of the bladder, &c.

Does the bladder suffer more or less during the later, than in the earlier stages of pregnancy? Generally it suffers less in the later stages, because it is then flattened out over the surface of the uterus.

Can it therefore retain much urine? No—but a small quantity in general, though it sometimes becomes enormously distended.

What are some of the consequences of the pressure of the developed uterus? Pain in the right side, similating liver complaint.

Upon what depends the pain frequently felt in one or both of the iliac regions, as the uterus becomes enlarged? Probably upon the stretching of the round ligaments.

Which of the round ligaments is the shorter? The right one.

Towards which side of the abdomen does the uterus usually incline as it becomes developed? Towards the right side.

How is this inclination accounted for? First, by the shortness of the right round ligament, and secondly, by the presence of the rectum on the left side of the spine usually.

Does the pressure of the fundus of the uterus upwards, produce any inconvenience to the stomach? It frequently causes dyspeptic symptoms.

What are some of the effects of pressure upon the bowels? Displacements through several natural openings in some instances—hence hernia in certain periods of pregnancy.

How are we to account for ventral hernia in pregnancy? Pressure of the uterus causes separation of the fibres of the abdominal muscles, and the escape of the bowel between them.

What kind of displacement of the bladder is apt to result from pressure of the uterus upon it? Hernia into the vagina, or less frequently into the crural ring.

What are some of the effects of the pressure of the uterus upon the great blood vessels? Congestions of the inferior vessels, hemorrhoids, varicose veins, &c.

How is the edema, to which some women are subject, to be accounted for? By pressure of the uterus upon the veins and lymphatics.

Is this pressure apt to affect the labia? It some-

times causes great distension and swelling with enormous serous effusion in the cellular membrane of the labia.

Does pressure of the uterus exert any unfavorable influence on the nerves of the lower part of the body? Pressure on the crural and obturator nerves, often causes cramps, spasms, and neuralgic pains.

What are the local sympathetic diseases of pregnancy? Irritation of the uterus and adjacent parts.

Is the excitement into which the uterus is thrown, usually to be regarded as a healthy action? In the natural state of society it is so; but in civilized life, this irritation often induces disease.

Does the vagina ever become sympathetically affected? It becomes the seat of a sensation of fullness, heat, and often a leucorrhœal discharge.

Does leucorrhœa ever thus become a symptom of pregnancy? In some doubtful cases this state of the vagina may aid in forming a diagnosis.

Do the glands of the vagina ever secrete very profusely during pregnancy? Sometimes the discharge is very copious, and is occasionally thrown out very suddenly.

From what other parts at this time may a copious and sudden discharge take place? Probably from between the uterus and decidua, between the decidua and chorion, or between the chorion and amnion.

What abnormal formation upon the ovum may give rise to this discharge? Hydatids.

What peculiarly distressing sympathetic irritation is sometimes brought on in the vagina or vulva by pregnancy? An inflammatory affection, resembling aphthæ, called pruritis vulvæ.

What effect has the pressure of the uterus anteriorly upon the skin? It sometimes greatly distends it and renders it painful.

Do the abdominal muscles participate much in the consequences of this pressure? They are often put

upon the stretch, and are occasionally thrown into spasm and pain.

In what pregnancy are these symptoms the most distressing? Usually, though not always, in the first.

What sympathetic effect has pregnancy upon the stomach? It mostly becomes disturbed, the patient being distressed with nausea and vomiting.

Is the stomach always afflicted thus by pregnancy? Not invariably.

What kind of sensation is it which women experience at the stomach, or epigastric region? A sense of sinking; sometimes of fullness, nausea, sometimes resulting in vomiting.

What circumstance aggravates this nausea of the stomach? Motion; it usually comes on the moment of rising from bed.

What is this disturbance usually called? Morning sickness.

Is it confined to the morning alone? It sometimes lasts the whole day.

Does it always commence in the morning? It sometimes comes on in the evening, the patient being quite free from it at other times of the day.

Is this morning sickness a popular sign of pregnancy? It is by some persons regarded as an invariable or infallible sign.

Do the olfactory and gustatory nerves become very susceptible with this affection of the stomach? Both the smell and taste seem to be affected with this irritability of the stomach.

Is the stomach affected by moral causes? It is rendered worse by depressing, and better by exciting moral causes.

Does any serious consequence ever result from this irritation of the stomach? Sometimes it results in confirmed dyspepsia.

What then happens? Flatulence, cardialgia, pyrosis, gastrodynia, and salivation.

In what way is the appetite depraved? The patient is apt to have fastidious tastes, longings; desires for outré articles, as slate pencils, charcoal, &c.

Is it necessary that this should be indulged? No—we should not encourage such morbid propensities.

What is the popular notion respecting this? That these longings, if not gratified, will result in some defect or deformity of the child.

Is it necessary always to withhold the object desired? The patient may be indulged in every reasonable desire without impropriety.

Do these inconveniences always occur? No—some women are better during pregnancy than any other time.

How long do the annoyances alluded to generally exist? Some patients suffer only a month, some three or four.

When are they usually most severe? During the second and third months.

When does the distress usually begin? Immediately after the suspension of the menstruation.

Is gastritis ever a consequence of this sympathetic irritation? Occasionally this occurs.

What is the pathological condition of the stomach in pregnant women? Usually it is not inflamed, but mostly in a state of irritation, or rather, according to some, of sedation.

Is there any indisposition produced by another cause, similar to the sickness of pregnancy? *Sea sickness*, in which also there is irritation, or sedation of the nerves of the stomach.

From what may we infer that the stomach is not inflamed? It is relieved by taking food, and especially by stimuli, cordials, &c.

Is it mostly accompanied by any sympathetic reaction? There is usually no sympathetic fever.

Is ordinary sickness of the stomach in pregnancy

usually productive of unpleasant consequences? Mostly without any bad consequences, however long the sickness may continue.

What affords temporary relief? Lying down, fresh air, moral excitement, &c.

Does the liver become implicated in the consequences of pregnancy? It often becomes the seat of pain, and is also sometimes functionally deranged.

What evidence have we of hepatic derangement? The urine is high colored, bowels are torpid, skin sallow, and sometimes the patient becomes jaundiced.

Is there any other peculiarity about the skin in some cases of pregnancy? It becomes covered by brown or yellow spots called maculæ.

Where do these spots usually appear? Upon the face and neck.

Do they present any bad omen? No—they are of little consequence, and usually go off after delivery.

Upon what visceral derangement do they seem to depend? Upon the hepatic affection.

What part of the glandular system is apt to sympathise with the gravid uterus? The salivary glands sometimes become greatly excited.

Do the gums become inflamed? Not necessarily.

What is the character of the salivary discharge? Thick and ropy, sometimes very abundant.

How are the mammary glands affected? They almost always become enlarged, slightly painful, and they occasionally secrete milk very early in pregnancy.

What name is given to a tumefaction, which sometimes extends much beyond the ordinary excitement? Mastodynia.

Suppose the mammæ after having been distended, should become shrunken and flattened, what indication would it present? That the development of the ovum had become suspended.

What other sympathies are involved in pregnancy? Those of a general nature are, first, excitements of the cerebro-spinal axis; and secondly, those of the vascular system.

How are the brain and the mental faculties affected? The brain becomes more impressible, and the mind more susceptible in most cases.

Does the pregnancy ever cause much depression of the faculties? The patient sometimes becomes despondent, and thinks every thing is wrong.

Does the opposite state of things ever occur? In some cases the sense of smell and taste becomes more acute, and the mind much more active and effective.

Is the vascular system necessarily excited at the same time? The vascular system is not necessarily correspondingly excited in such cases.

Is the excitement of the cerebrum ever attended by mania? In some cases, though it rarely comes on till after delivery.

What are some of the consequences of this excitement of the brain and spinal marrow? Hysteric convulsions.

Does a moderate degree of this stimulation of the nervous system ever produce a favorable result? In some cases the patient is able to use her muscles more freely than when unimpregnated.

What disturbances are produced in the lungs, or thorax by this nervous excitement? Dyspnœa; sometimes palpitation and spasmodic cough.

What effect has this nervous stimulation upon the uterus itself? It increases its sensibility, and renders it often extremely sensitive to the touch.

What influence has it upon the muscular fibres of the uterus? It often causes irregular contractions, somewhat resembling labor.

What effect has this excitation upon the general sensibilities of the patient? She sometimes has nervous chills, a kind of universal tremor.

When are these sensations experienced? Sometimes at the very commencement of pregnancy.

Are they liable to produce much muscular movement? In some cases they amount to regular hysteria.

Do some patients experience a condition opposite to this? They become faint even during sleep.

Does this condition of the uterus ever excite any disturbance of the cephalic nerves? Some females suffer much from otalgia, odontalgia, cephalalgia, &c.

Is toothache very common in pregnancy? With some females it is, and some ladies lose a tooth at every pregnancy, in consequence of the recurrence of odontalgia.

It has been said that some females become better, more able to make exertion, &c., during pregnancy; are any patients in an opposite condition? Some women become very feeble, and unable to walk, during the greater part of pregnancy, until after delivery.

PLETHORA.

We have spoken now of the nervous excitability as a consequence of pregnancy,—what are occasionally its effects upon the vascular system? Most young women become more developed, their vessels enlarge, and carry more blood; the whole body, pelvis, &c., become increased in size.

Is this a natural and salutary consequence of pregnancy? It should be so regarded.

How is this change brought about? By a plethoric condition of the blood vessels.

Under what circumstances does this plethora become an evil? In civilized life, females who live luxuriantly, and do not use much physical exertion become subject to local congestions.

What then, is the best remedy for the natural plethora of pregnancy? Free exercise and temperate living.

What sympathetic disturbance is a usual preventive

of plethora? Nausea and vomiting, as in the morning sickness.

After what period of pregnancy does plethora usually exist most conspicuously? The fourth month, and later when the stomach usually has become more tranquil.

What kind of pulse is presented in this plethora? It is not frequent; rather slow and full, indicating congestion.

What is the condition of the veins? They are commonly very full.

What are some of the consequences of this plethora? Sense of general fullness—headache, particularly on lying down.

How is the respiration affected? It is oppressed, and there is usually a difficulty in taking a deep inspiration.

What is the condition of the heart, in this general plethora? It labors irregularly and with difficulty; there is palpitation combined with oppression.

CONSEQUENCES OF EXCESSIVE PLETHORA.

What is the consequence of the congestion of the portal system? Distress in the epigastric region, and aggravation of the dyspeptic symptoms where they co-exist.

What effect has plethora upon the viscera at the lower part of the abdomen? Sensation of weight and distress, especially at the usual menstrual period.

What evil consequences may arise from plethora in the uterus? Hemorrhage from the cervix, or from the inner surface of the uterus, from detachment of the placenta.

Is it of importance to attend to these symptoms? They sometimes become exceedingly dangerous and should be carefully watched.

Does this plethora ever cause effusions of blood in any other part than the uterus? Hæmoptisis, hæme-

tamesis, sanguineous apoplexy of brain or lungs, and melanosis, may result from it.

What other evil may happen from extreme turgescence of the blood vessels in the brain? Convulsions.

What other species of effusion may result from this plethoric condition of the vascular system? Serous effusions upon the brain, into the thorax, the abdomen and the general cellular tissue, &c.

What effect have these effusions upon the excited condition of the nervous system? They aggravate the irritability of the nervous system.

How are the bowels sometimes affected by it? They sometimes pour off the water or serum of the blood in large amounts.

What is the general condition of the blood, in a pregnant female? It is usually altered; has more coagulable lymph or buff upon it when drawn.

Is this the result of inflammatory action, during pregnancy? It is not necessarily dependent upon inflammatory action.

Is this plethoric condition never attended by fever? In some cases, it is combined with fever and inflammatory action.

FEVER FROM NERVOUS IRRITATION.

How should we regard a little febrile condition of the patient if she have no plethora? It is not to be looked upon as a serious affair. It is usually remedied by cooling medicines, and generally goes off after delivery.

What is it apparently the result of? Nervous excitability; it is not apt to be followed by debility.

What are the symptoms of this *nervous* fever? Dry skin, small pulse, &c.

BEST REMEDY FOR IT.

What means are best calculated to relieve this irritability of pregnancy? Cold bath, sponging with cold water.

What might we regard as suitable temporary remedies? Mild anodynes; particularly those of an antispasmodic character, as assafœtida, ether, &c.

Why not use the narcotic anodynes, as camphor, and opium, &c.? When the system becomes habituated to the use of them, the irritability is usually increased?

Is it safe to deplete very much, during pregnancy? Too much depletion induces debility, and consequently increases irritation.

MILD TREATMENT MOST PROPER IN PREGNANCY.

Should the treatment of pregnant women generally be mild or active? The treatment should be mild in most cases.

Should it be preventive or hygienic, rather than corrective or medical? It should be rather prophylactic and hygienic—the professional counsellor should give proper attention to suitable exercise of body and mind, rather than medicine in most cases.

What general rules should be laid down, in reference to diet? It should be light, easy of digestion; chiefly vegetable.

Suppose the patient is dyspeptic, and subject to flatulence? Allow her some light animal food, and mild condiments.

What rule should be observed in regard to her drinks? They should be simple, and in moderate quantities.

What ill consequences may arise from drinking large quantities even of water? In the opinion of some, it is apt to increase plethora.

What popular prejudice exists in regard to the amount of diet, required by pregnant women? That they require more food while pregnant, and that it should be richer and better than usual.

How far should this idea be favored? Though it is in general, fair to suppose that a woman in this situation

would require more, yet due prudence is requisite in the indulgence of a very strong appetite.

After the period of morning sickness has passed, what should she do to remove plethora? She should use as much exercise as may be consistent with her physical ability.

EXERCISE DURING PREGNANCY.

What are some of the good effects of exercise? When taken regularly and in moderation, it excites secretion, and prevents dyspepsia, increases strength and removes irritability.

Suppose the patient be too feeble to walk, what kind of exercise can she substitute for it? Riding, sailing, &c.

What are some of the disadvantages of too much exercise? Pain, fatigue, spasms, abortion or premature labor.

Suppose your patient was already very plethoric, would you oblige her to use exertion to wear it off? This plethora should first be reduced by proper direct means before she be recommended to use exertion.

What treatment of a general nature, is proper to allay the great irritability of some pregnant women? General bathing, using merely the cold bath.

Suppose the cold bath is followed by a sense of chilliness, what should be substituted? It should be tepid, or warm, followed by moderate friction upon the skin.

What peculiar advantages does the warm bath offer at the later stages of pregnancy? It is very useful to promote the relaxation of the system.

What consequences might occur if the bath were too hot? Labor might be brought on, especially if the woman be plethoric.

VENESECTION, &c.

What are some of the more distinct means of

reducing plethora? Venesection is the most efficient.

How do pregnant women usually bear bleeding? Very well—most of them think they require it, and to many of them it is almost indispensable.

Is it better to bleed freely and rarely, if you bleed at all, than to bleed a little, and often? Bleed freely, and empty the turgid vessels.

After a free bleeding, whereby a plethoric state is removed, what are the best measures for preventing its return? Free exercise, bathing, aperient medicines, mild diaphoretics, &c.

How would you treat a local inflammation, as pleuritis, hepatitis, &c., during pregnancy? By free bleeding, and after the reduction of the inflammation, an early use of opiates.

Why resort to opiates? To prevent the strong liability to premature uterine contractions.

What unfavorable influence may irritation of the bowels exert upon the uterus? It is very likely to bring on contractions, and false pains.

What treatment is proper in the febrile state of the system accompanied by nervous chills, and debility? Here omit venesection, but administer instead, spirits of nitre, and mild diaphoretics.

What should be done during the apyrexia? Mild tonics should be given.

What advice should be given the patient, when she experiences difficulty in urinating in consequence of the pressure of the uterus? To bear forward, or to place herself on her knees, and if necessary, press the uterus upward, when it rests upon the pubes.

Suppose this means will not afford her the necessary relief, what should be done? Introduce the catheter, and allow the urine to escape through it.

CATHETERISM.

What precautions are to be taken, in the introduction of the instrument under such circumstances?

Bear in mind, that as the bladder is compressed by the uterine tumor, it is usually carried so high up as to put the urethra upon the stretch, and fix it parallel with the posterior surface of the symphysis pubes, and that the bladder itself is pressed forward over the symphysis. Consequently, the point of the catheter, is to be carried along parallel with the symphysis until it gets above it; the handle is then to be depressed, in order to carry the point of the instrument into the cavity of the bladder.

What evil consequences may result from the long retention of the urine? Paralysis of the bladder, or its rupture and the death of the patient.

What useful mechanical measure may be resorted to, to obviate or remove the pressure of the uterus upon the bladder? A broad bandage applied in front of the lower part of the abdomen and carried round to the back, or even across the shoulders.

When the uterus presses upon the rectum, and causes a tenesmus, how should it be relieved? By pressing the uterus upward.

APERIENTS, &c.

What means should be used to remove the impacted feces from the rectum? If oleaginous injections do not succeed, the mass must be removed by a finger or a spoon-handle, or some similar instrument.

How is the pain which is often felt in the abdominal muscles, the skin, &c., to be relieved? By rubbing them with oleaginous and anodyne mixtures.

Supposing much of the abdominal pain to depend upon the existence of flatus in the intestines, what should be done to relieve it? Remove the flatus by some carminative or gently stimulating laxative, or antispasmodic.

If the intestines become inflamed, how may they be treated? By cups, leeches, &c., to the sides of the

abdomen; and the other modes of treatment considered proper in ordinary cases.

What other cause may give rise to pain in some portion of the abdomen? Either of the varieties of hernia, if they become strangulated, or the bowel inflamed.

HOW TO TREAT HERNIA.

What is the proper mode of treating hernia? Reduce it and keep it supported by a proper truss or bandage, which presses upon the opening only—properly adjusted adhesive straps often answer this purpose very well.

What is the most usual kind of vesical hernia? Into the vagina, although it has been known to take place into the abdominal or the crural ring.

How is it to be relieved? By supporting the superincumbent uterus by a proper bandage.

CAUTION ABOUT DRESS, &c.

What caution should pregnant women observe in regard to dress? It should be such as to make no pressure on the abdomen; they should abandon the use of corsets, or have them so constructed as not to compress the body.

How should the hemorrhoids of pregnant women be treated? By laxatives, leeches, cold poultices, &c. They should be speedily returned within the sphincter, whenever they become prolapsed.

What is the proper treatment for varices? Bleeding and skilful bandaging.

Can all patients who are troubled with varices bear to have their limbs firmly bandaged? In some cases bandages which compress the limbs cause a sense of extreme suffocation.

What other exciting cause besides pressure is liable to produce anasarca, varices, &c., in pregnant women? General plethora.

What serious evil may be apprehended from great

distension of the lower extremities by anasarca? Gangrene and sloughing.

What surgical treatment does it sometimes require? Evacuation by puncturing.

TREATMENT OF SYMPATHETIC VAGINITIS AND PRURITIS VULVÆ, IRRITATION OF THE BLADDER, DIARRHŒA, &c.

How is the sympathic vaginitis of pregnant women to be treated? When the patient is plethoric, by free general bleeding, then followed, if necessary, by leeching and cold astringent washes, and alterative injections of nitrate of silver, of alum, &c.

PRURITIS VULVÆ.

What means should be resorted to for the relief of pruritis vulvæ? General bleeding, if plethoric, and then mucilaginous injections, well charged with borax, and occasionally with laudanum, or better still, the aqueous solutions of opium.

Under what circumstances would the sulphate of zinc or nitrate of silver be useful? After the removal of the plethora.

How strong a solution of the nitrate of silver should be used? Two, three, or four grains to the ounce of water.

IRRITATION OF THE BLADDER, BOWELS, STOMACH, &c.

How should we treat irritation of the bladder? By the use of bland diuretics.

What treatment is most proper for the diarrhœa of pregnant women? As it is mostly the result of, or accompanied by, inflammatory action, it should be treated by depletion, mild laxatives, regulated diet, &c.

When might astringents be used? After the inflammation has been cured.

Should the remedies applied to the stomach for morning sickness be curative or palliative only? Pal-

liative only—thus, let the patient eat before she rises; let her take her cup of coffee and a piece of bread in bed, or instantly after rising. Her food should be solid mostly; she should not indulge much in liquids.

What should she do if she becomes again sick after eating? Lie down at once, or go directly out and walk in the open air.

What temporary medicines may she take to relieve the vomiting, when it is urgent? Lime water and milk, and other antacids. Hot drinks, as catnip tea, infusions of cloves, nutmegs, mace, &c.

Suppose more active measures be necessary, what other articles may be administered? Spirits of turpentine in small doses, and wine in moderate quantities: the aromatic sulphuric acid may be administered, and in some urgent cases, sinapisms may be applied over the region of the stomach.

What notice should we take of her longings, if her sickness be urgent? They should be gratified to avoid irritability, unless she desires improper and outrè articles.

What organ should we regard as the primary seat of irritation of the stomach? The uterus; and hence none other than mild palliative measures can be useful.

If the liver become torpid and jaundice occur, how must it be treated? By mild alteratives, a gentle mercurial course, and especially the proper use of alkalies.

Suppose the secretions from any organ become very abundant during pregnancy, how should they be managed? Great care should be taken not to arrest them suddenly.

Suppose the patient suffered from mastodynia? Care should be taken not to remove it at once by the application of cold, for fear of causing a metastasis. It should be moderated by warm application, leeches, &c., if necessary.

What kind of plaster is very useful, and usually sufficient to relieve it? The Diachylon or soap plaster.

What other means often succeed? Frictions with anodyne liniments.

Is it important to distinguish neuralgia of a part from inflammation? It is: and the treatment should be conducted accordingly.

What kind of anodynes are best, if the pain be purely nervous? Camphor, hyosciamus, ether, assafœtida, &c., but not opium.

How should we treat the pains in the chest in pregnant women? With cups, leeches, &c., if inflammation exist; but if it be merely neuralgic, palliate with assafœtida, camphor, &c., carefully withholding opium, if possible.

Suppose there is pain in the abdomen, with indications for bleeding, what subsequent treatment should be used? In such cases, after proper sanguineous depletion, give opiates by the stomach, or in enemata, to prevent the contractions of the uterus.

How should we treat a severe cephalalgia or otalgia? By leeches, laxatives, &c., upon general principles, and after excitement is allayed, give anodynes.

Suppose the woman have severe tooth ache, what objection would there be to the extraction of the tooth? Any sudden and powerful shock, as that of extraction of teeth, might bring on contractions of the uterus, and result in premature delivery. It is therefore better, as soon as it is admissible, to give anodynes.

CARE TO BE TAKEN OF THE MAMMÆ.

What care should be taken of the mammæ of pregnant females? The condition of the mammary glands should be enquired into in the latter periods of gestation, and especial regard should be had to the state of the nipple.

What are some of the conditions to which the nipples are subject? In many females, primips especially, the central portions of the nipples are so umbilicated as to be scarcely visible: in some there is a sulcus running across the disc of the efferent extremities of the gland, so that the two halves of it are introverted.

What consequences are likely to arise from this condition? First: The conversion of the true skin which should cover and protect the end of the nipples, into a thin epithelial secreting surface on which the nervous papillæ are much exposed, and which evince an exalted sensibility whenever touched, and especially when subjected to the suction by the child.

What treatment should be adopted to correct this condition, if possible, before the breast is brought into use? By some judicious means, as by the gentle application of a breast pipe, to be exhausted by the mouth of the patient, or by a gum elastic bag or air-pump, till the nipple becomes elongated and the efferent ducts are brought into parallel lines.

Does this plan succeed effectually in a short time? In the majority of cases it requires great perseverance, inasmuch as in most, the nipple has to acquire a development in the right direction before its permanency can be relied upon.

What may be said of astringent or moderately stimulating washes in those cases? Judiciously applied, in moderately active potions, they will often contribute to the hardening of the investment of the lactiferous ducts, and prepare them for the use of the child after its birth.

Is there any other condition to which the nipple of the primiparous or multiparous female is subject, that is unfavorable to comfort of the mother or child when needed for nursing? The nipple is sometimes chapped, fissured or sulcated more or less deeply, the substance between the different sulci resembling the

granules of a ripe blackberry, and in some instances broken out nearly as easily. The sulci are mostly the seat of an exalted sensibility whenever the nipple suffers from the least irritation.

HEMORRHAGES FROM THE UTERUS DURING PREGNANCY.

How are hemorrhages from the uterus during pregnancy classified? Into *avoidable* or *accidental* and *unavoidable*.

What is meant by accidental or avoidable hemorrhage? That which occurs at any period of pregnancy from an accidental detachment of the placenta when it is situated at a portion of the uterus, the development of which is proportionate to that of the placenta itself, as about the body or fundus of the organ.

UNAVOIDABLE HEMORRHAGE—PLACENTA-PRÆVIA.

What do you mean by unavoidable hemorrhage? It is that which inevitably occurs from the detachment of some portion of, or the entire placenta from the uterus, in consequence of its being situated at a part which is developed more rapidly than the placenta itself.

Is the hemorrhage necessarily constant in this case? It may be arrested temporarily by the process of coagulation, but it is subject to constant recurrence.

What are the means of diagnosis in these cases? Examination per vaginam, by which you can feel the fibrous structure of the placenta over the os uteri.

How much of the hand should be introduced into the vagina for this purpose? In order fully to appreciate the existence of placenta prævia, it is mostly necessary to pass in the entire hand.

HOW MANAGED.

How are you to proceed to arrest the hemorrhage in this case? It has been proposed to place the patient

in a recumbent posture with her hips elevated, keep her circulation as much reduced as may be consistent with her health, and then resort to such medical means as favor coagulation of the blood.

Are you ever to resort to version for the purpose of effecting delivery before term? This has been proposed, and directions given to force open the os uteri for this purpose, but we regard it as highly improper. We think a better method would be (if any be called for,) to perforate the placenta, allow the liquor amnii to escape and the uterus to contract upon the fetus, &c., as in cases of premature artificial delivery, when the pelvis is known to be too small for delivery at term.

What means have you of arresting the hemorrhage mechanically? The tampon, which may be cautiously applied, and continued until complete dilation occurs, and the uterus expels it, the coagula, the placenta and the fetus from its cavity.

Should you keep down the force of the circulation, favor the coagulation of blood, by absolute rest, by the use of tampon, &c., even though you have to continue this plan for some months? We think this would be the appropriate plan of treatment.

Suppose you find hemorrhage coming on at the full period of gestation, should you palliate during the first stage of labour? Yes; never introduce the hand till the os uteri is dilated or dilatable.

How are you to proceed, as soon as the second stage of labor commences? Pass up a hand, puncture the ovum, facilitate as fast as possible the delivery of the child, and as soon as it is born, place the other hand on the fundus of the uterus, and ensure its complete contraction.

May not the pressure of the head or breech or body of the child in the os uteri, arrest for a time the hemorrhage? It will sometimes do so.

Suppose the pains are slow, and the head is above the superior strait? Turn and deliver, or give

ergot, and as soon as the head is within reach, apply the forceps. Treat the third stage according to established usage.

In cases of placenta prævia, as soon as the os uteri is dilated, what are you to do? Pass your fingers, and then whole hand, between the placenta and surface of the uterus, seize the breech, knees, feet, and deliver footling.

What other practice has been proposed by some of the German physicians in such cases? To let the child alone, fill the vagina with a tampon, made of strips of bandage, portions of which can be removed as the head or presenting part is protruded through the uterus; and when it is fairly within reach, use forceps, blunt hook, or other authorized means for expediting the delivery.

RETROVERSION OF THE UTERUS IN PREGNANCY.

What do you mean by *retroversion of the uterus?* That in which the fundus of the uterus is thrown down into the hollow of the sacrum, while the os tincæ is carried up behind the pubes.

Is pregnancy ever complicated by this accident to the uterus? Numerous instances have occurred of this variety of displacement of the uterus after it had begun to gestate with a matured and fecundated ovum.

During what period of gestation may this condition of the uterus take place? During the first three months only, since after this period it is too late to change its position in this direction.

At what time are you to expect that labor will take place in this case? Generally before the sixth month.

Have any women laboring under this accident ever reached the full term of gestation? Very few, if any instances are recorded, except perhaps some which have been mentioned by Dr. Merriman, an English accoucheur and author.

What are the inconveniences and dangers arising from this accident? Retention of urine and feces from pressure; more or less paralysis also of the lower extremities; inflammation and sloughing of the bladder, rectum, and uterus.

How may retroversion of the gravid uterus hazard the life both of mother and fetus? By the fatal pressure which the developing organ may exert upon the bladder in front and the rectum behind, causing inflammation and sloughing of either or both, but particularly the former viscus. The embryo or fetus may also have its vitality destroyed by the resistance offered to its circulation and development in consequence of the close confinement of the uterus in the cavity of the pelvis.

What are the usual causes of retroversion? Violent straining, as in jumping, falling, &c. Efforts at defecation while constipated; too great a distension of the bladder; the superincumbent pressure of impacted feces in the colon, &c.

What are the symptoms of retroversion of the uterus? Constant bearing down sensation, great difficulty, or utter impracticability of evacuating the bowels or bladder, &c.

What is the most prominent symptom, and also the most dangerous one? Retention of urine, and distension to the immediate danger of rupture of the bladder is the earliest urgent symptom, though when in some cases the urine can be evacuated artificially, and the bowels accommodate themselves to the aid of art, the condition of developing uterus and ovum becomes the subject of great concern.

As many of these rational signs are fallacious, how are we to determine the existence of the retroversion of the uterus? By the introduction of the finger into the vagina, and discovering that the os tincæ is closely forced up behind the pubes, while the body is thrown backwards into the hollow

of the sacrum, and the vagina thereby very much shortened.

What are the indications for treatment? Reduction or restoration, if possible; but if the uterus be so far developed as not to admit of being replaced, we must palliate by artificially evacuating the bladder and bowels; if the enlargement of the uterus produce serious inconvenience, it will be necessary to induce abortion, by rupturing the membranes if possible, by a stilet passed into the os tincæ; but if not, by a puncture through the substance of the uterus, either directly through the vagina, or through the recto-vaginal septum.

ANTEVERSION AND HERNIA OF THE UTERUS IN PREGNANCY.

What other displacements of the uterus may complicate pregnancy? Anteversion of the uterus, and hernia of the uterus.

What consequences to pregnancy may happen from either of these conditions? Little inconvenience can happen to pregnancy from anteversion of the uterus, as it is usually rectified in proportion as it becomes developed; but with regard to hernia of the organ, this sort of displacement would entail serious consequences upon gravidity.

ABORTION AND PREMATURE DELIVERY.

What is to be understood by the term *abortion* in obstetric language? It signifies the separation of an ovum from the mother's organs previous to the completion of its development.

To within what period of gestation do we limit the term abortion? Till the end of the sixth month.

What do we call the expulsion of an ovum at any time between the end of the sixth, and the end of the ninth month of gestation? Premature delivery.

How many varieties or modes of abortion are

there? Two: one in which the ovum is detached merely, and the other, in which it is not only detached, but expelled.

Upon what conditions may abortion depend? First: Those peculiar to the mother. Second: Those peculiar to the child.

What are the various causes of abortion? Some depend upon the state of the system generally, some upon the state of the uterus itself.

What condition of the general system of the mother favors abortion? Any extremes of health, as plethora, asthenia, great irritability of the nervous system, &c. Syphilis, and other severe constitutional irritation, accidental diarrhœa, active catharsis caused by drastic purgatives, &c.

What condition of the uterus is favorable to, or predisposes to this accident? Plethora; the menstrual nisus; irritability of its fibre, &c.

Does the female necessarily abort when subjected to the influence of these predisposing causes? No: it usually requires the aid of an exciting cause to effect the abortion.

What may be regarded as exciting causes? Mechanical irritants, great muscular effort, nauseating, or peculiar odors; the smell of segars the odor of flowers, &c., under some circumstances produce this effect.

Is the production of abortion always within the power of the mother? Not always; some women are unable to produce it, however they wickedly attempt it, by jumping, standing, taking active medicines, &c.

What is the most certain mode of effecting abortion? By rupturing the membranes, and allowing the fluids to escape.

How are you to explain the action of the causes of abortion? They must produce first organic irritation in the blood vessels of the uterus, and this must extend to the muscular tissue of the organ.

What distinction are you to make between irritation of the blood vessels, and that of the muscular fibres of

the uterus? It has been explained thus, according to the theory of Bichat: irritation of the blood vessels involves merely the organic life; irritation of the uterine fibre involves the animal life—hence when irritation of the blood vessels occurs, there is not necessarily any contraction, but when irritation of the uterine or muscular fibre occurs, there will be contractions, and perhaps also expulsion. This however is to be understood as a speculation.

Will contraction of the uterine fibres arrest hemorrhage so long as the ovum is retained? No: if the ovum be detached, it is usually a cause of hemorrhagic irritation.

Suppose however you have a partial detachment of the ovum, can the hemorrhage be arrested before the ovum be expelled? It may in consequence of the coagulation of blood in the orifices of the vessels, provided the surface of the detachment be not too large.

SYMPTOMS OF ABORTION.

What are the symptoms of abortion? Sense of weight, and pain in the pubic and sacral regions, more or less muco-sanguineous secretion escaping from the vulva, &c.

Can you diagnosticate between abortion and dysmenorrhœa, during the first three months of supposed pregnancy? Not with any confidence, even in some cases after the mass within the uterus has been extruded.

What are usually regarded as the diagnostic signs of abortion? Regular, intermitting pain in the back; hemorrhage to some extent; more or less watery discharge; strong bearing down, expulsive pains: most or all of these, except the watery discharge are met with in dysmenorrhœa.

Does abortion always become complete when once begun? Not always; the ovum may sometimes be preserved in a state of vitality for some length of time, though its development may not increase.

What consequences result from abortion? They

are very various; some women recover well and enjoy even better health after one abortion, but others suffer ill health, during a part or all the remainder of their lives, especially when the death of the ovum has been caused by mechanical violence.

How do you prevent abortion? Diminish the morbid irritability, by removing the cause. If plethoric, bleed, &c. If too much reduced give nutritious food, tonics, &c. Keep the patient quiet.

What are habitual abortions? A recurrence of abortions at every pregnancy.

PREVENTIVE TREATMENT IN CASES DISPOSED TO ABORTION.

How are you to arrest a tendency to abortion? By a general antiphlogistic and revulsive plan of treatment, which diminishes the force of the blood upon the inner surface of the uterus, &c.

Blisters to the back, &c., are often useful in such cases. Amongst the internal remedies are the sugar of lead, digitalis, &c., to diminish the force of the circulation.

What valuable mechanical means have we at hand, for the arrest of the hemorrhage? The tampon, for the purpose of arresting the flow of the blood through the vagina.

What is the best article for the tampon or plug?

Strips of bandage, or better still, a piece of sponge, cut into an oblong shape, and so introduced as to allow of its expansion within the vagina.

How far may the use of the tampon involve the safety of the ovum? It has been supposed dangerous to it, but this can rarely if ever happen, provided it be properly introduced, and judiciously managed.

What precautions are first to be had recourse to? Reduce first of all, the force of the general circulation, by vascular depletion, then allay the pain by opiates.

May the ovum be detached from the surface of the uterus? It may become detached, after the symptoms have continued a short time.

WHAT TO DO IF OVUM IS DETACHED.

How are you to act when you discover this fact? Encourage its complete expulsion.

Suppose you find the ovum lodged in the orifice of the uterus, what should you do? Remove it, or facilitate its detachment.

Should you give large doses of opium in this particular state of things? If any, merely sufficient to allay the nervous irritation, not enough to paralyse the uterine contractions.

Should you always make an examination per vaginam, in case of supposed detachment? Yes, always, carefully.

How should you proceed to effect the complete removal of the ovum in such cases? By the finger, by Dewees' hook, or better still by Bond's abortion forceps.

Does the hemorrhage usually cease speedily, after the removal of the ovum? It speedily in most cases becomes reduced to a mere lochial discharge, which usually subsides in a very few days.

Upon what does uterine hemorrhage depend, during or immediately after labor, or for some time before labor begins? Upon detachment of some portion of the placenta.

Where is the placenta usually attached? About the fundus, or one of the sides of the uterus, near one of the fallopian tubes.

What are the consequences of the detachment of the placenta, to both mother and child? Both are endangered by it; the mother suffers from the direct loss of blood, and the fetus from imperfect hematosis. Should any lesion of the placenta occur, the fetus suffers from direct loss of blood, while the mother may escape accident.

Is the detached portion of the placenta ever re-united? It is probably never re-united in such way as that the function can be carried on in the part once detached.

What becomes interposed between the placenta and the internal surface of the uterus? A coagulum of blood, which may become organized and adherent both to the uterus and placenta.

HYDATIDS IN THE UTERUS.

What is supposed to be the origin of *hydatid* formations, which sometimes distend the uterus? At one time they were supposed to spring from mucous surface, and hence, originate in the lining membrane of the uterus. At present the prevailing opinion is that they depend upon the serous membranes for their nutrition, and it has been observed, that they are rarely or ever found, except in some way or other, connected with pregnancy. In such cases, they are usually first developed upon the surface of the ovum.

What influence do they exert over the development of the ovum itself? When numerous, they interfere with the nutrition of the ovum, which then blights, so that upon extrusion there is little appearance of the original ovum.

What are the symptoms of hydatids in the uterus? They considerably resemble those of ordinary pregnancy, and hence, cannot be satisfactorily diagnosticated, until they begin to be extruded. Women affected with hydatid formations in the uterus, are rather more liable to have occasional or constant bloody serous discharges from the uterus, for a greater or less length of time, before expulsion takes place. In the early months, the diagnosis is very obscure, but when the uterus is greatly distended, physical exploration and ballottement, prove the non-existence of a fetus in utero.

What opinions have been entertained, respecting the dependence of hydrometra upon hydatids? Dr. Denman regarded dropsy of the uterus, as a very large hydatid.

Suppose the existence of hydatids be suspected, or even satisfactorily made out, what plan of treatment ought to be adopted? As a general rule

it will be proper to palliate any disturbances which may occur, and then wait until symptoms of labor come on, when if the extrusion of the mass or masses be tardy, administer ergot sufficent to excite the expulsive action of the uterus.

EXTRA-UTERINE PREGNANCY.

What is the second class of pregnancies usually adopted by obstetric writers? Irregular, abnormal, or extra-uterine pregnancy.

Of how many varieties does it consist? 1st. Of Ovarian pregnancy. 2d. Of ventral or abdominal pregnancy. 3d. Of tubal pregnancy. 4th. Of interstitial pregnancy.

What is meant by the term ovarian pregnancy? That in which the embryo becomes developed in the ovary.

What by ventral or abdominal pregnancy? That in which the ovule or embryo becomes deposited in the cavity of the abdomen and developed there.

What by tubal pregnancy? That in which the embryo becomes developed in the tube.

What are we to understand by interstitial pregnancy? That in which the ovule has in some way or other become situated between the layers of muscular fibres in the uterus, and there acquires a degree of development.

Have we any precise knowledge of the causes of these different varieties of extra-uterine pregnancy? We have no precise knowledge of the causes—our ideas are merely speculative on this subject. It has been ascertained by experiment that if the fallopian tube be obstructed by ligature, or by excision of a portion of it, after impregnation and before the ovule has passed through its canal, it becomes unable to arrive at the uterus, and it may be somewhat developed in the ovary or tube as a consequence, &c.

Does the development of the fetus go on in the

body, or at the surface of an ovary? At the surface, and rarely, if ever, in the body.

What then are the investments of the embryo? Amnion, chorion, and peritonæum, and probably adventitious membranes.

Upon what does abdominal pregnancy probably depend? Upon irregular action of the tubes; the morsus diaboli not embracing or retaining the ovum.

What is the process by which the ovum forms a nidus in which to be developed? Its presence in the cavity of the peritonæum probably excites inflammation and an effusion of coagulable lymph, which surrounds the ovum, as the decidua would in the cavity of the uterus.

Upon what does tubal pregnancy possibly depend? Upon stricture of the tube, preventing the passage of the ovum into the cavity of the uterus.

What in this case are the investments of the embryo? Amnion, chorion, and parietes of the tube.

Can interstitial pregnancies be satisfactorily accounted for? Not at all, unless under the supposition that when the ovum reaches the parietes of the uterus in the tubes, it is arrested at that point and ulcerates its way into the substance of the walls of the organ.

For what length of time may the ovum continue to develop, in these cases of extra-uterine pregnancy? For one or two months, though in some cases much longer.

What usually becomes of it after that time? It usually dies, becomes encysted in its own membranes, then gradually converted into a sebaceous matter, and looks as though it had been kept in spirits.

Is it subject to decomposition while thus encysted? It rarely becomes decomposed unless the cavity of the cyst is exposed to atmospheric air.

Are the placenta and cord mostly found appended to the embryo in these cases? In all cases where there is any degree of general development.

What substitutes the decidua? Coagulable lymph.

What is the condition of the cavity of the uterus in these cases? It is always furnished with a decidua.

Does this decidua remain in the uterus as long as the embryo remains in the pelvis or abdomen? Not usually—it is sometimes thrown off in a few months.

Do any inconveniences result to the mother in those cases in which the fetus lives and continues to be developed? Serious consequences usually ensue; irritation, inflammation, suppuration, ulceration, and sloughing, are all liable to take place; sometimes to an extent to cause the death of the mother.

What kind of accident may accompany the rupture of the cyst, and cause the immediate death of the mother? Profuse hemorrhage.

If death do not happen from this cause what may produce it more tardily? Peritonæal inflammation.

Do any instances occur, in which the fetus becomes considerably developed, without causing fatal irritation? There are instances on record in which the woman has carried such a fetus many years.

What then usually happens about the end of the ninth month? A parturient effort takes place, and sometimes the decidua and some coagula are thrown off; uterine action then subsides.

Does the patient ever recover after such parturient efforts? Some women live many years after such an event.

Is it possible for them to have a true pregnancy while they are carrying the product of extra-uterine conception? Some cases of this kind are on record, and there is no reason why pregnancy should not recur after the decidua has been discharged from the cavity of the uterus?

What is the more common result? Irritation, followed by inflammation and abscess, opening externally, as at the umbilicus, groin, perinæum, or into the intestines.

What are the symptoms of extra-uterine pregnancy?

They are very irregular, and differ somewhat from those of normal or uterine pregnancy.

What takes place in regard to the catamenia? It mostly returns at the usual period of quickening, and then continues regular, especially if the decidua have been thrown off.

What is the condition of the mammæ? They mostly become flattened after having been partially developed.

Is there any difference in the time at which the fetus is felt? If it acquires any muscular development, it is felt earlier than in natural pregnancy.

Is the ovary liable to take on an effort at abnormal generation? Yes—it has been known to contain hair, teeth, &c., which were probably the result of abnormal generation.

What other instances are known which lend support to the doctrine of emboitment or encasement of germs? The fact recorded (in Coxe's Med. Museum, vol. ii. No. 2.—Sept. and Oct. 1805,) in which a fetus was found within the abdomen of a boy, fourteen years old; and the case related by Velpeau, where the rudiments of a fetus were engrafted on the testicle of a male, &c. Blundell saw an "imperfectly developed fetus, about the size of six or seven months, and which was taken from a boy, where it lay in a sac in communication with the child's duodenum, the boy being pregnant."

TREATMENT IN EXTRA-UTERINE PREGNANCY.

What are the indications for treatment of extra-uterine pregnancies? Generally palliative, to relieve or remove irritation as much as possible.

What is to be done when the cyst is ruptured? Support the patient's strength by tonics, cordials, &c.

Suppose an abscess should form and point externally? Apply fomentations, poultices, &c.

Would it be advisable to open an abscess, if it could be reached by an incision? By good authority, it is

thought that it would be best to make a free incision, to evacuate the contents of the abscess, and thus remove the irritation.

Would it be proper to favor the removal of the contents of the abscess by injecting it with cleansing washes? This would probably greatly facilitate the restoration of the patient's health.

Is the placenta mostly adherent to some part of parieties of the abscess? It is usually attached strongly to some portion of the wall of the sac.

How is it to be separated? By washing away the debris, as fast as it sloughs.

Would gastrotomy be advisable in the early stage of abdominal pregnancy? The opinion is entertained by some that it would be safer for the mother that it be done, and thus protect her against subsequent irritation.

THE OVUM, EMBRYO, AND FETUS LIABLE TO ACCIDENTS WHILE IN UTERO.

Is the ovum, the embryo, or the fetus liable to any accidents while in utero? The product of conception has been observed to be incident to various accidents, resulting in modification by excess, or diminution of parts, or disarrangement of the various organs. These accidents have been classed under the general epithet of *monstrosity*. Thus the ovum has become one immense hydatid, or a number of the cells of the placenta have taken on this modified action, and there has resulted a congeries of cells filled with fluid, varied in size, which congeries has been called by Madame Boivin, Hydatide en grappe, or grape-like hydatids. The influence of this accident to the placenta upon the embryo has been various—sometimes blighting its growth very perceptibly, so that when the contents of the uterus were thrown off, it has been found imperfect and shrivelled, or in some cases it could not be seen at all, having probably died and been dissolved in some of the fluids. In other instances the

whole ovum has been converted into a solid substance resembling, when cut open after being thrown off, a firm clot of blood. Such discharged masses have received the popular name of *moles*. Again the contents of a gravid uterus may undergo changes which result in the defect of development, and when thrown off at various periods of the gestation, are found to hold but faint resemblance to the normal product of conception in the human female. Besides this, it occasionally happens that two ova fecundated at the same time, and passing into the uterus in a healthy condition, by some accident become so fused together at different points, as in some cases to appear as one child with two heads, or with four arms, or with four legs, or with two apparently perfect persons fastened to each other at some small point which enabled each to obey, to some extent, its own instincts, as was illustrated in the case of Ritta and Christina, reported by European writers, as well as the case of the "Siamese Twins" seen in America by very many citizens but a few years since. Although there have been numerous instances of various kinds of monstrosity reported at different periods through a long series of years, we are not aware that there has been any systematic account or classification of these departures from the ordinary laws of formation, since between the years 1832 and 1837, when Isidore Geoffroy Saint Hilaire, published his very interesting and instructive Histoire Générale et Particuliere des Anomalies de l'Organisation chez L'Homme et les Animaux; Ouvrage Comprenant des Recherches sur les Caractères, la Classification, l'Influence Physiologique et Pathologique, les Rapports Généraux, les Lois et les Causes des Monstruosités, des Variétés et des Vices de Conformation, ou Traité de Tératologie—a work which all medical men should read. Dr. Meigs has also collected the history of a few cases which have occurred in this country. In the winter of 1850–1, Dr. Pemberton Thom, a pupil of the Philadelphia Obstetric Institute, while

attending upon one of the patients, found her with four feet offering at the vulva, which when delivered were discovered to belong to two female children, who had been subjected to this process of fusion to such extent as to have the two heads and two thoraxes united apparently into one, so that there was but one face, two perfect and two imperfect ears; four well developed thoracic members, two distinct abdomens, each with its umbilical cord, placenta and pelvic members.

The injection, dissection, anatomical preparations and the description were performed by the dextrous hands of Dr. John Neill, the curator of the College, and the artistic representations were executed under his supervision.

What are the description and illustration of this subject as published in No. 2, of Quarterly Summary of the Transactions of the College of Physicians of Philadelphia, from January to April inclusive, 1851?

No. 46, Skeleton of a double-bodied monster, and No. 47, Alimentary canal, respiratory organs, &c., of the same, presented by Dr. Warrington.

In the dissection and preparation of the specimen, the following peculiarities were observed.

Exterior.—The general appearance is that of two children, having a thorax in common, with a single head. By referring to the accompanying drawing, it will be seen that the head is apparently single, and that the face presents no peculiarity but a fissure of the lower lip in the median line. On the back of the head, which was very wide, there was a symmetrical double ear, the meatus of which was imperforate.

The thorax was single, common to the two bodies. Upon its exterior were four nipples, two of which are seen in the drawing, the other two were in the same position on the corresponding part of the thorax. There were four upper extremities, all of which were perfect, equally developed, and natural in their positions.

Below the umbilicus the separation was complete. The lower part of each body was perfect. The lower extremities were of the same size and appearance.

The *cord* was very thick, and consisted of two umbilical veins, which were of the same size, and four umbilical arteries, one of which was very large, and the other very small. At a distance of two inches from the placenta, which was double, the cord bifurcated, each part entering its own placenta. See fig. 143.

Fig. 143.

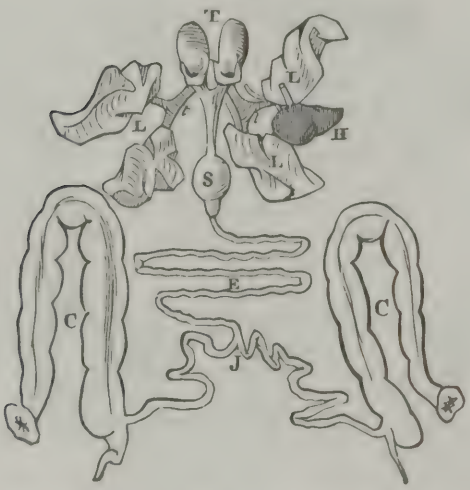


Alimentary canal.—The mouth was a single cav-

ity, containing two tongues, separated posteriorly by an irregular mass covered with skin, which was probably a rudimentary cheek or lip. The fauces and upper part of each pharynx were distinct; each contained a uvula and two tonsils. The pharynges communicated, and, from the funnel-shaped cavity formed by their junction, there proceeded a single œsophagus.

The œsophagus terminated in a stomach containing a single cavity, though its shape was such as to give the idea that two stomachs had been fused by their lesser curvatures. The antrum pylori is plainly seen on either side in fig. 144, in which T, represents

Fig. 144.



the tongues, *t*, trachea; L, lungs; H, rudimentary heart; S, stomach; E, intestine; J, bifurcation; C, colon.

From the pylorus there extended a single intestinal canal which, at a distance of two feet from the

stomach, divided into two distinct tubes, each about fifteen inches in length. These had all the characters of the small intestine, and terminated regularly at the ileo-colic valve. The large intestine was completely double, there being one for each child; each was perfect from the cœcum to the anus, not excepting the appendix vermiforis, and contained the usual amount of meconium.

The liver was single, large, and symmetrical; it contained two lobes of about the same size, and a single gall-bladder. The spleen and two well-formed kidneys were found in each trunk. The genitals, which were female, were perfectly developed both externally and internally in each pelvis.

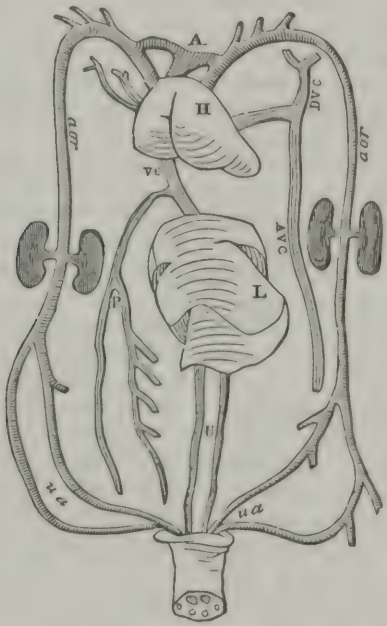
Organs of Respiration.—The larynx opened in the usual position in each pharynx, and the trachea and bronchial tubes were regularly developed for each body. The lungs were four in number; those belonging to the right child had a large vessel entering directly at the apex.

Circulation.—There were two hearts; one was rudimentary and situated between the lungs of the left child; it was conical in its shape, consisted of but one single cavity, and from its base there proceeded a single vessel. The other was developed irregularly, (fig. 145;) it was situated under the sternum, to which are articulated the right ribs of the right child, and the left ribs of the left child. From the base of this heart there arose an aorta for each child, which occupied its usual position on the vertebral column. The larger arterial branches were regularly given off, with the exception of the umbilical arteries of the right child, one of which was very large and appeared to be the continuation of the primitive iliac; the other was exceedingly small.

The ascending vena cava of the left child did not pass through the liver, but, after being joined by the descending vena cava, the common trunk thus formed passed behind the heart, emptying into the right

auricle. The ascending vena cava of the right child did not seem to exist below the liver, but the blood-vessels from the lower extremities opened into the portal vein, which was large proportionally. The pulmonary artery communicated with each aorta. See fig. 145, in which H, represents the heart; A,

Fig. 145.

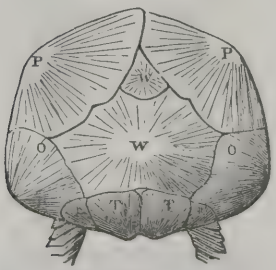


pulmonary artery; *aor*, aorta; V C, ascending vena cava of right body; P, portal vein; U, umbilical veins; *u a*, umbilical arteries; L, liver; D V C, descending vena cava of left body; A V C, ascending vena cava of left body.

Skeleton.—The skeleton measured thirteen inches

after it had been prepared and dried. The head measured four inches in its occipito-mental diameter, and three and a half inches in its bi-parietal. The anterior and superior surface of the head was single; the duplication commenced at the base of the cranium. The bones of the face are those of a single head, with the exception of an effort at a double formation of the inferior maxillary bone and of the palate processes of the superior maxillary. The frontal and parietal bones were those of a single head, but there were two occipital bones; to the condyloid processes of each were articulated the atlas of each vertebral column. There were four temporal and two imperfect sphenoid bones. See fig. 146, in which P, represents the parietal bone; W, wormian bones; O, occipital bones; T, temporal bones; L, lateral portion of the occiput.

Fig. 146.

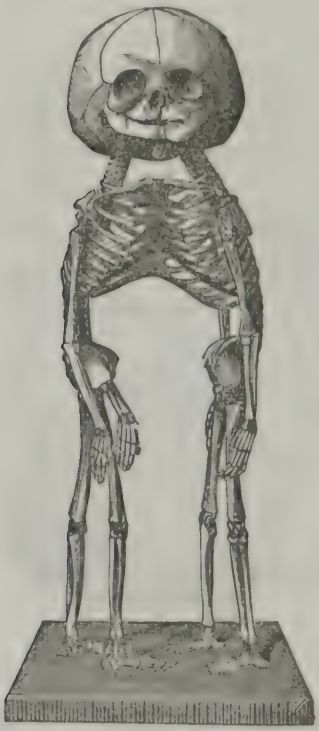


Below the head, the skeleton was completely double. The thorax was a single cavity having two sterna, to which the ribs and clavicles were articulated in a very peculiar manner. The right ribs and clavicle of the right skeleton, and the left ribs and clavicle of the left skeleton, articulated with the

anterior sternum. The left ribs and clavicle of the right skeleton, and the right ribs and clavicle of the left skeleton, articulated with the posterior sternum.

In other respects, the bones of each skeleton were developed and articulated as usual. See

Fig. 147.



DR. WEST'S CASE OF MONSTROSITY.

What is the description and illustration given by Dr. Francis West, Jr., of Philadelphia, of an anencephalous fetus born under his care, and reported by

him in vol. i. of the Medical Examiner? In the following brief and imperfect sketch, I have attempted only to delineate the more characteristic features of this interesting specimen of monstrosity, leaving to others to explain the causes of their occurrence, and to fix their precise value and importance. It is a perfect specimen of what has been thought by the learned author of the article "Anencephalous," in the American Cyclopædia of Pract. Med. and Surgery, to be the rarest form of this kind of abnormal deviation, and the only one to which the term can be appropriately applied—"So seldom does it occur," he adds, "that only a few cases of it are to be found on record."—Some remarkable peculiarities of external configuration and structure exist along with the entire absence of the cerebro-spinal axis, which give to the specimen before us increased value and curiosity. By some very essential and radical vice of formation, the human fetus may become so materially degraded in the scale of being, as very closely to approximate, in some prominent points, the lower order of animals; and I may state that its peculiar configuration and structure would not by any possibility have permitted it to assume the erect position, supposing it capable of maintaining an independent existence. In obedience then to this necessity, which I think will be perfectly apparent from what follows, it has been represented, in the accompanying drawing, in the horizontal position, and not with the view of adding grotesqueness to its other singularities. This anencephalous fetus possesses all the characters belonging to the varieties, "Anencephalus" and "Derencephalus" in Geoffroy St. Hilaire's classification of monsters. The cranial bones which have been thought always to exist, though sometimes only in a rudimentary condition in fetuses of this kind, are here *entirely absent*. The basilar process of the occipital bone is united with the bodies of the dorsal vertebræ, the intervening cervical ones having no existence; these vertebræ and those be-

low them to the termination of the column, are "cleft posteriorly and enlarged by spina bifida, with their lateral halves much inflected outwards and separated from each other." This condition of the vertebræ

Fig. 148.



leaves a large chasm in the back, about 14 lines wide, covered only by the membranous semi-circular sac, represented in the drawing. The whole face with each individual organ of sense is much enlarged, and presents a most unnatural expression of countenance. The direction of the eyes as well as the whole face, in consequence of the excessive posterior inclination of the base of the cranium, is immediately upwards,

even more so than is shown in the drawing, when the fetus is held in the erect position, which therefore must have been attended by their total uselessness. To the whole margin of the chasm in the back, which at the angle formed by the junction of the basilar portion of the skull to the dorsal vertebræ becomes a triangular cavity of some depth, is attached the sac above mentioned, which is continued forwards on either side along the edge of the oblique plane formed by the base of the cranium and the bones of the face. This sac which was filled with fluid was ruptured during labor; it enclosed the membranous cornua, to be seen in the drawing, and which alone occupied all the space upon which should have rested the cerebral mass. Along the margin of this bag throughout its whole extent from the orbits to its termination at the sacrum, is an abundant growth of very dark hair, at some points more than half an inch long,—which arrangement gives the idea of the scalp having been drawn over the back, and countenances the notion that the hēad with its contents or something answering to them, were to have been developed upon the back, which displays to all appearance the attempt to form there a lodgment for them. The above impression is very strongly forced upon us by a posterior view of these parts as they exist in the preparation, which could not be given in the drawing. Portions of the membranes of the medulla spinalis, forming elongated circular sacs, containing a little thin fluid, existed upon and in close contact with the depression along the bodies of the vertebræ. The upper and lower extremities present remarkable peculiarities which deserve special attention in our observations and reflections upon the character and destination of this much deformed being. The clavicles do not exist at all: and the scapulæ in actual contact with the sides of the face, are attached to the fore-part and sides of the thorax, instead of posteriorly, with their long diameters perpendicular to, instead of parallel with the

axis of the body; the arms and fore-arms are of unusual length and very loosely articulated at the carpo-radial articulation; the deltoid muscles are extraordinarily developed, and the skin of these, as well as that of the lower extremities has much hair growing upon it; the lower extremities are also very long and muscular, and present the same peculiarity of direction as the upper ones at their union with the body. The articulations at the ankles are very loose and admit without the least violence the touching of the metatarsus and the spine of the tibia as the foot rests upon a plane surface. Whole length of fetus from heel to base of cranium, 11 inches; from anus to base of cranium, 5 inches; from external malleolus to trochanter, 6 inches; length of femur, 3 inches and 6 lines; length of tibia, 2 inches and 9 lines; length of foot, 2 inches and 3 lines; length of whole arm, 8 inches; length of humerus, 3 inches and 3 lines; length of fore-arm, 4 inches and 9 lines. The nerves of the extremities are fully developed, and ramify through the parts to which they are respectively sent. On tracing up these nerves they were found suddenly to terminate at the vertebræ and had no connexion with the spinal membranes spoken of. This fact is of importance to those who contend that the nerves are formed at the periphery of the body and are developed towards the central masses, with which they afterwards unite. One or two ganglions of the sympathetic nerve were discovered in the thorax, and its dissection was not further pursued. The umbilical cord is about 1½ inches in diameter, and contains the entire liver, which is closely adherent to its sides, with a large portion of the great and small intestines. The other organs of the abdomen are natural and in situ, and so are those contained in the thoracic cavity. It was desired to pursue particularly the dissection of the nerves of animal life, but as this would materially have destroyed the preparation, the examination was reluctantly given up, and it is hoped without the sa-

crifice of much information. The parents are natives of Lincolnshire, England, and were married in June last, exactly six months before the woman aborted with this monstrous fetus. The father is about 25, and the mother 28 years of age; they are perfectly healthy and well formed. They arrived at a hotel in this city much fatigued by a forced journey which they had made from Cincinnati, and the mother was very soon after taken sick. I reached her just after the waters had been discharged, and found, on examination, the chin of the child presenting at the inferior strait: a very few pains sufficed to deliver it. The umbilical cord and placenta were much diseased, and of the latter small pieces continued to come away for several days, producing each time alarming hemorrhage, which jeoparded the life of the woman. She ultimately, however, recovered perfectly, and left the city

Is the welfare of the fetus ever compromised by the accident of having the cord encircle the neck, one or more times? Fetuses at birth are sometimes found dead. Under such circumstances, though probably not so much from the fact that the cord by its pressure interrupts the circulation through the brain, directly, as that it is itself so compressed as to cut off the necessary connexion with the placenta.

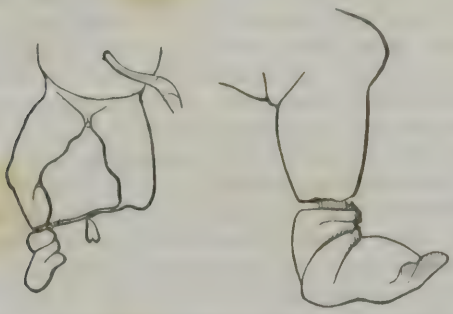
Is the life of the fetus ever endangered by such evolutions in the uterus as tie the cord into close knots? The life of the fetus is even sometimes destroyed by the tension by which the cord is drawn when thus knotted, since in such instances the vessels have been found nearly or quite obliterated.

Does any inconvenience ever result from the coiling of the umbilical cord around the limbs of the fetus? Such circumstances have been known to cause atrophy and sometimes even an amputation of the member which it encircled, see figs. 149, and 150.

What Irish author has given the fullest account of

this spontaneous amputation of the limbs of the fetus in utero? Probably Dr. Montgomery of Dublin.

Fig. 149. Fig. 150.



Is it satisfactorily proved that all the cases of spontaneous amputation of the fetal members are dependant upon the accidental coiling of the umbilical cord around them? It would be best, before coming to such a conclusion, to consult his entire paper on this subject, and to read attentively the cases he describes, as well as those he refers to as having been collected by Professor Simpson and others.

Is the fetus subject to any modification of its normal form, ascribable to its position in the uterus? Many cases occur in which the shape, or the direction of the growth of the lower extremities particularly, appears to be modified by the peculiar position of the fetus in utero, or the influence which the pressure of the uterus may exert upon it. Hence the varieties of bow legs, club feet, &c

To what other accidents may the fetus be subjected during its continuance in the cavity of the uterus? Many, as for example, if the placenta becomes detached, the fetus may become atrophied; or even putrescent. The fetus may also be subjected in a greater or less degree, to certain diseases to which the mother is

incident; the mother may have mild varioloid and the fetus die of confluent small-pox.

ACCIDENTS TO THE CHILD DURING LABOR.

To what accidents is the child liable during the maternal effort at parturition? They are numerous, depending upon the condition of the uterus in some cases, and upon that of the pelvis, or that of both together, in some other instances. Should the placenta be implanted over the orifice of the womb, its separation as the orifice dilates, may not only cut off the means of hematosis for the child, but it may and probably does in some cases give exit to the blood of the fetus, so that it may die of actual hemorrhage from the placental vessels. If the membranes should be ruptured in the very early stage of the labor, the contractions of the fundus and body of the uterus severe, and its orifice rigid, the fetus, either by direct compression made upon itself, or by the compression of the cord or placenta between the uterus and itself, may be greatly prostrated or its life entirely destroyed. Again: if the umbilical cord should become prolapsed, and it be not possible to return it to the cavity of the uterus so that the head of the child may descend first, the circulation may become fatally arrested, or the fetus, when born, is with extreme difficulty resuscitated. When the pelvis is faulty in its formation, so as to be defective in its amplitude, the brain may be either fatally compressed or its functions so far impaired that they are afterwards a long time in recovering, or are always imperfectly performed, leaving the child susceptible to convulsions or imbecility, or other forms of insanity.

ASTHENIA OF INFANTS AT BIRTH.

What do you mean by an asthenic condition of the child at birth? That it is feeble, the features are shrivelled and narrow, resembling old persons. The child is blue, does not respire freely; its circulation

is very feeble; it groans, does not cry, nor seem to make any effort to breathe, or if it breathes, it does so very feebly.

How should you manage such a condition? Endeavor to stimulate its respiratory muscles by warm bath, and cold douches alternately; by dry heat, slight friction with the end of the fingers; do not fatigue it, but wash it with warm alcoholic fluids, then apply warm cloths; assist its respiration by blowing into its lungs, &c.; give it barley water, gum water, sugar and water, &c.; do not let it be fatigued with nursing; take care not to weary it by dressing; wrap it in a warm flannel or in cotton wadding, to accumulate animal heat as much as possible.

ASPHYXIA OF INFANTS AT BIRTH.

What do you mean by asphyxia? A state of apparent death, in which the child is perfectly motionless, and either pale, or livid.

How many kinds of asphyxia do you recognise? Two; simple, and congestive asphyxia.

What are the common causes of this state? Pressure in the passage through the pelvis. Pressure on the cords or the placenta, by arresting the circulation, &c.

Is the brain of much importance during intrauterine life? It does not appear to be. The child is like a plant, appearing to have a mere vegetable existence while in utero.

What causes operate often to produce asphyxia? Compression upon the cord around the child's neck: knots in the cord which may arrest its circulation. The retention of the membranes over the child's head. The floodings of the large quantities of the liquor amnii or blood over the child. Suffocation under the bed clothes, or by the membranes around the head. The respiratory organs clogged with mucus, &c.

What evidences have we of the state of simple asphyxia? Pallor, absence of pure blood on the

surface, absence of respiration. The breast, &c., may have a bluish appearance, but other parts are pallid.

What evidences have we of the congestive state of asphyxia? The face is swollen and turgid with blood. There is absence of respiration and circulation; the whole surface is more or less blue, and the extremities cold.

Are these two distinct affections, or are they probably degrees of the same condition? It is probable that they are but degrees of the same state.

How should you treat asphyxia? Remove all mechanical impediments to the respiration or circulation; place the child free from the cloths, &c., clear all mucus from about its glottis; assist its respiration, if it be able to swallow, give it a little fluid to wash away the mucus. Keep the child connected with the placenta as long as any circulation exists. Keep the body warm, put it into a basin of warm water; bring this to the bed and lift the child into it, before the placenta is removed; then dry it at once by warm cloths; when it comes out, use free friction in this case, about the respiratory muscles with towel or hand; use brandy, alcohol, or hartshorn liniments, and also stimulating injections; then dash on some cold spirits, or cold water; then in a moment wipe it off, and plunge it into the warm bath again, &c. Imitate the process of respiration, by pressing the thorax and abdomen, alternately with the head: sometimes breathe into the lungs, pressing the larynx slightly against the spine to prevent the air from passing through the esophagus into the stomach, if you cannot soon succeed thus, use the tracheal pipe or quill to convey the air into the lungs.

How must this tube be used? Pass it along the side of the mouth and throat, over the glottis, and then force in a small quantity of your own breath.

What can be said of the value of galvanism or

electricity in these cases? They have not generally succeeded, and the apparatus is rarely at hand.

Are you speedily to abandon this treatment if your first efforts do not succeed? By no means; the efforts must be persisted in for half an hour, an hour, or even more before relinquishing any attempts to resuscitate it; and after you have succeeded, oblige the nurse to continue frictions over the skin for some time.

How would you treat the congestive form of the affection? The same as before, adding some care to diminish the amount of blood in the veins of the child. Therefore, do not tie the cord; for if the symptoms be urgent cut the vein at least, some say the whole cord, and thus let the blood escape.

How much blood may you thus take away? From half an ounce to an ounce.

TUMORS ON THE SCALP OF INFANTS AT BIRTH.

Are children ever born with tumors on the scalp? It not unfrequently happens that tumors of greater or less size are found on the scalp.

Of what character are they? Generally bloody, and are of the character of ecchymosis.

How are they formed? Most likely by the excessive pressure made upon the body of the child within the uterus or pelvis, the blood is squeezed out into that portion of the scalp which is not so compressed.

May these tumors be supposed to be fractures of the cranium? They may, and sometimes they strongly simulate fractures with depression of a portion of the bone.

Are fractures of the cranium often met with? They are not, though the bones are sometimes indented by the pelvic bones during the second stage of labor.

What should you do for the relief of the tumor? Apply cold lead-water, &c., with a view to discuss it.

Should you use frictions? No: because by so doing you may excite inflammation in the tumor.

Suppose it is inclined to suppurate, how should you do? Poultice it, and promote the formation of pus.

Should you open it freely? It should be freely opened, unless as happens in some cases, absorption goes on very rapidly. If opened, it is to be dressed as a simple suppurating wound.

What other accidents to the child in utero, during the labor for its delivery, and for some time after its birth, could you describe, did time and the capacity of this volume permit? Very many, as hair-lip, cleft palate, deficiency or excess of members or parts, different varieties of hernia, exstrophies, atrophies, &c., &c., and in relation to the accidents after birth, as the several diseases of the skin; the morbus cæruleus, or cyanosis neonatorum, and other affections of the vascular system; the various disorders of the digestive apparatus, &c., all of which may hereafter be disposed of as may be necessary and desirable.

Has the subject of the diseases of women been exhausted in the course of the present inquiries? While those to which women are incident during the menstrual and pregnant conditions have been but cursorily examined and treated of, it is not pretended that thus far even an allusion has been made to those which frequently complicate the puerperal condition, as mammary engorgements, deficient or excessive lactation during the first few days and weeks after delivery—the metritis, the peritonitis, the metro-peritonitis, the phlebitis, the mammary abscess, &c., &c., which are also liable to occur to the puerperal and nursing female. The apology for this apparent omission is to be found in the want of time and space, at present, to do them justice. They may, however, secure their due claims to consideration at a future period.

THE OBSTETRIC INSTITUTE

OF PHILADELPHIA,

UNDER THE CHARGE OF

JOSEPH WARRINGTON, M. D.

I. DESIGN OF THE OBSTETRIC INSTITUTE.

1. To furnish Obstetric aid to such indigent females at their own homes, as apply for the benefit of the Philadelphia Dispensary, Lying-in Charity and Nurse Society.

2. To supply practical facilities to gentlemen pursuing the study of medicine, for attaining to present and future usefulness in their profession, by a close preliminary training, and a subsequent attendance as accoucheur in ordinary, upon those who may require obstetric aid from the Dispensary, &c., &c.

3. To qualify Nurses for their especial duties in the sick-room, with particular reference to obstetric cases, and to impress them with a due sense of the relation they hold with the Physician, in the management of such patients.

II. QUALIFICATIONS OF CANDIDATES FOR ADMISSION INTO THE INSTITUTE.

1. Gentlemen, who produce from a Professor, preceptor, or some other responsible person, a certificate, that they sustain a good moral character, that they are diligent in the study of Medicine, and that they have attended at least one full course of Lectures included in the Curriculum of a degree-conferring School, are eligible to admission to the instructions and practical advantages of the Institute,—provided they procure their tickets, and regularly enter the class within five days from the commencement of either of the courses of Lectures indicated in page 443 of this announcement.

2. The principal reserves the right to receive *Graduates* in Medicine, at later periods of the course, whenever the comple-

ment of sixteen pupils has not been made up within the time specified.

III. ORGANIZATION OF THE INSTITUTE.

J. WARRINGTON, M. D., Principal.
——— ——— M. D., Senior Assistant.
——— ——— } Junior Assistants.
——— ——— }

Practising Pupils,—limited to sixty-four per annum; and, as nearly as possible, sixteen to each course.

IV. DUTIES OF PUPILS.

1. To give regular and punctual attendance upon the practical instructions of the Institute. Absence from a lecture will require explanation, since each meeting of the class is regarded as a professional appointment; and no pupil can be expected to have the management of actual cases, unless he shall have been present at, and shared in all the practical exercises upon the models to the satisfaction of the Principal.

2. To make one or more visits to the patients under his care, during the latter periods of pregnancy, to give such instructions in relation to their persons and positions as the nature of the case may require: and promptly to obey a request to attend upon the labor, unaccompanied, except by the Principal or a duly recognised assistant.

3. To summon to his aid, at as early a period as practicable, an assistant or the Principal, whenever he is embarrassed in reference to the management of the case under his care, especially if the life of the mother or child is involved in the slightest danger.

4. To inform the Principal in person or by note, of the delivery, as soon as possible after its occurrence, and furnish a summary account of the condition of the mother and child, at the date of such communication.

5. To visit his patients daily, or more frequently for at least five days, and then once in two days until after the tenth day from the period of confinement. To embrace every suitable opportunity to make himself acquainted with the actual condition of the puerperal woman and her child, with such other matters as appertain to the professional superintendence of the affairs of the nursery.

6. To enter, as soon as practicable, under appropriate heads, in the *Tabular Reports*, the results of his observations, and to write at length a history of the case as observed by him, through its whole progress.

7. To render to the Principal, in a neat and perspicuous style, the tabular reports, and a minute detail of all the cases which have been under his care, on the alternate

pages of thesis paper, with a title page after the following manner:

RECORD OF CASES

ASSIGNED ME BY DR. WARRINGTON, DURING MY CONNECTION WITH

THE PHILADELPHIA OBSTETRIC INSTITUTE,

IN THE MONTHS OF

———, ——— and ———, 18

BY

_____ _____

OF

_____

8. And to return to the Principal, the names of all patients, whom, with his consent, he may decline to attend, that they may be distributed to other members of the class.

V. PRIVILEGES OF PUPILS.

1. To attend all the lectures given during their period of engagement in the practice of the Institute, besides the instructions and exercises of their preparatory course.

2. To receive a DIPLOMA, after the following form:

The Obstetric Institute,

FOR THE

Practical training of Physicians and Nurses in their duties to pregnant, parturient, and puerperal Women, and their young children:

BASED UPON

The Obstetric Department of the Philadelphia Dispensary,—founded in 1786; the Philadelphia Lying-in-Charity,—incorporated in 1832; the Philadelphia Nurse Society,—established in 1839;—for supplying appropriate Obstetric Aid to indigent females at their own houses.

This is to Certify,

That ——— ——— M. D.,
has attended —— full course of Practical Instructions, —— course of Exercise upon Obstetric Models in my Lecture room,

and, under my supervision, has had the management of patients, deriving aid from the above Institutions at their own houses, during a period of —— months.

JOSEPH WARRINGTON, M. D., Principal.

Philadelphia, ———— 18

The above diploma is granted as an award of merit, for the faithful discharge of duties assigned by the Principal, and assumed by the pupil.

It may also be signed and sealed by the President or a Vice President and attested by the Secretary of the Lying-in-Charity, in testimony of the approbation of the Managers of said Charity; Provided, the pupil has obtained the title of M. D. from a legalized Medical School, and has presented to the Principal a clinical report of the cases that have been under his care, satisfactory to the principal and the signing officer.

It is neatly executed on map paper, covering an area of about 15 by 22 inches, and involves no pecuniary expense on the part of the recipient, except when furnished upon parchment, at a cost of two dollars.

VI. MANNER IN WHICH THE DIPLOMA IS FORFEITED.

Neglect of regular attendance upon the preparatory courses of Lectures, or omissions to fulfil the duties to patients assigned by the Principal and assumed by the pupil, renders the latter liable to have the remaining cases withdrawn, and the Diploma withheld, at the option of the Principal.

VII. JUNIOR ASSISTANTS.

(*a*) *Who may become Junior Assistants.*

Pupils who have complied with the regulations of the Institute during two terms, consecutive, or nearly so, may become candidates for the office of Junior Assistant.

(*b*) *How they are chosen.*

Whenever more than two candidates present for Junior Assistants they shall compete for the office, by a test of their qualifications in the presence of the Principal of the Institute, and two Physicians, nominated by the Managers of the Dispensary, or of the Lying-in-Charity. The examination shall be conducted orally and in writing. Two negative votes will reject the candidate. But if the essays be creditable, the fact shall be publicly announced to the members of the Institute.

VIII. DUTIES OF THE JUNIOR ASSISTANTS.

1. Either of them to hold himself in readiness to substitute the practising pupils, in attendance upon patients during their

absence, to relieve them if the labor be so protracted that they have need of rest, and to aid them in any embarrassment, in the management of cases of simple labor.

2. To apprise the Senior Assistant, or in his absence, the Principal, of the probable nature of the case, should they discover any thing abnormal in it.

3. To aid the practising pupil in making distinct notes of the cases, in which they have been associated, and if desired, to fill up such details as may appear to him to have been omitted by the pupil.

IX. PRIVILEGES OF JUNIOR ASSISTANTS.

1. The Junior Assistants shall have the privilege of attending all the lectures and exercises upon the models, intended for the instruction of the classes, with whom they are associated.

2. The fact of the faithful performance of their duties, may, if desired by them, be inserted on their Diplomas over the signature of the Principal.

X. SENIOR ASSISTANT.

(*a*) *Who may become a Senior Assistant.*

1. Pupils who have received the Diploma of this Institute, and satisfactorily discharged the duties of Junior Assistants during two consecutive terms, may become candidates for the office of Senior Assistant.

(*b*) *How he is appointed.*

2. If more than one candidate presents for the office of Senior Assistant, the *concours* shall be conducted as in case of Junior Assistants, except that the standard of acquirements shall be of a higher order, in the case of the Senior, than of the Junior Assistant.

XI. DUTIES OF THE SENIOR ASSISTANT.

1. To hold himself at all times, ready to respond to a call from a Junior Assistant, either to aid in diagnosis, respecting labor, or the presentation, or position of the child, or the necessity of manual or instrumental aid.

2. To apprise the Principal immediately on the occurrence of any accident, or in his absence, either of the consulting accoucheurs of the Philadelphia Dispensary, whose decisions in the case shall be duly respected.

3. To see that all such cases are fully and regularly recorded.

4. To report daily to the Principal the state of the patients, in whom he has been interested.

5. To render such assistance in the lecture-room and at the exercises of the practising pupils and Junior Assistants, on the models, as may be necessary.

6. To attend whenever possible at the place of meeting of the patients, applicants for the benefits of this Institute, and assist in the registry and distribution of them to the practising pupils.

7. To assist, if required, in the instruction and training of the Nurses under the direction of the Principal and the managers of the Philadelphia Nurse Society.

8. And to have supervision of the reports of individual cases in which he has been interested, as entered in the record book, and see that the Tabular statements are properly made out.

XII. PRIVILEGES OF THE SENIOR ASSISTANT.

1. The Senior Assistant shall have the privilege of controlling the judgment and actions of the Juniors and practising pupils, in regard to unsettled points of Obstetric practice, unless his views differ from those of the Principal or the consulting accoucheurs of the Philadelphia Dispensary, in which case either of them shall be the umpire.

2. The faithful discharge of duty of the Senior Assistant, may be declared upon his Diploma, attested by the Principal.

XIII. THE PRINCIPAL

Exercises the entire supervision of all cases under the charge of the Institute, and he alone, or in conjunction with the Managers of the several corporations on which it is based, holds all the Assistants, pupils, nurses and patients, amenable for any omissions of duty, or commission of impropriety.

XIV. MODE OF TEACHING.

(*a*) It is the aim of the Principal to make his instructions to his classes, as demonstrative and practical as possible—hence part of each course is occupied in a brief review of the Anatomy of the female organs of reproduction, the different pelvic viscera, illustrated by diagrams, and wet preparations of the organs removed from the pelvis, as well as the relations which they hold to each other, and to the pelvis within which they are included; the development of the uterus for the accommodation of the ovum; the study of the pelvis as the canal through which the ovum must pass—leading thus to an examination of its form, axes, diameters, altitudes, planes, &c.

(*b*) The mode of action of the uterine and accessory powers in parturient effort, [labor,]—the influences of the os uteri, the vagina and pelvis in changing the direction of the fetus, in course of its expulsion, [mechanism of parturition,] the study

of the different surfaces of the fetus, and the mode of diagnosticating its various presentations and positions at the upper part of the pelvis,—the various deviations, in presentation and position of the fetus, and the mode of rectifying them, are all taught demonstratively and practically upon the models. The Medical and Surgical means to be used in case of tardy, difficult and impracticable parturition; as well as the various details of duty of the physician and nurse in the chamber of the parturient and puerperal female, and the necessary attention to the infant, are regarded as important items in the course of Instructions.

The courses are so arranged that by the time the minds of the pupils have been fully impressed with these topics, they have opportunities and occasions to exercise their knowledge, by attendance upon cases which are assigned to their care. To relieve them from the pressure of such responsibility as is incident to the initial practitioner in his entrance upon his duty, each one has the privilege of having associated with him a Junior Assistant of the Institute, who has had the advantage which the experience of two previous terms of practice has afforded him, and who in turn may demand the aid or experience of the Senior, who is in all cases, expected to notify the Principal, or a consulting accoucheur of the Dispensary, of any special difficulty. Thus in some instances liable to occur, the pupil, Junior and Senior Assistants may be associated with the Principal, in such cases as require Manual or Instrumental aid. Observations of several years past, have fully demonstrated the advantage which the attainment to, and exercise of the office of Assistants have given to the several successful candidates. Those who have held the relation, have subsequently become well established in Obstetric and general practice in the situations in which they have located.

(*c*) The balance of the course of Practical Instructions, if any time be left, is employed in lectures on such diseases of women and children as are likely to engage the attention of an Obstetric practitioner.

(*d*) A portion of each course of the lectures is occupied in instructing in their special and appropriate duties as nurses to the sick, but particularly to obstetric patients, such women as for their intelligence, and apparent suitableness for the performance of their duties in the Nursery, as after an examination by a committee of Ladies of the Nurse Society, have been recommended by them to the instructions and services of the Principal in carrying out the designs of the Institute. In these instructions the male members of the class participate.

The attention of gentlemen who reside at a distance from Philadelphia, and who wish to become connected with this Institute, is invited to this circumstance, as it is strongly probable

that it would advance not only the interests of the Physician, but that of the patients in the district in which he hereafter intends to settle for practice, if, during his stay in this city he could secure the education of one or more nurses, who would be willing to locate in his neighborhood. Each Nurse, upon her having received a course of instruction and faithfully attended patients under the direction of the Principal and the Visitors of the Nurse Society, obtains a neat certificate, signed by the Principal and such of the Lady Visitors as are satisfied with her performance.

XV. FACILITIES FOR IMPARTING OBSTETRIC KNOWLEDGE.

(*a*) *The Miscellaneous Cabinet.*

Care has been taken to supply the Cabinet with every variety of means of illustration which the counsels of friends and pupils at home or abroad could suggest; and they consist of mannekins, one of full size, for the demonstration of the proper positions of the parturient and puerperal female, others representing the abdomen, pelvis, and thighs,—with a number of fetuses and placentæ, &c., all manufactured by the best Philadelphia Artists in this department, to the special order of a late Professor of Obstetrics, and the Principal himself.—A great variety of Obstetric Instruments, some of them manufactured by the late celebrated Botschan, of London, under the supervision of Professor Davis,—as well as by our Artists, are kept for illustration and use. A standing order is in the hands of one of our most extensive Surgical Instrument Makers, to supply the Cabinet with a specimen of every improvement or new invention of importance in this department.

(*b*) *The Anatomical Cabinet*

Contains many specimens, illustrative of the Anatomy, Physiology and Pathology of the generative apparatus, including a series of ova and fetuses, from the earliest stage up to the complete intra-uterine development. Constant accessions are being made to this part of the means of illustration, and the Principal avails himself of this opportunity, gratefully to acknowledge the kindness of several of his pupils and friends, in presenting to him a number of valuable specimens. He, moreover, cherishes the hope that, either in their private relations, or as members of the *Obstetric Society*, not only his former, his present, but his future pupils will, as opportunities offer, and inclinations prompt, continue their favors, that thereby the materials for thorough instruction by this species of demonstration, may become complete.

(*c*) *The Pictorial Cabinet.*

The drawings used in aid of the practical instructions, are

numerous, and can be so arranged, as, in conjunction with the wet preparations and the models, to make a strong impression upon the understanding of the pupils. They are mostly colored after nature, and hold a definite relation to the size of the adult and fetal subjects. The dimensions of each figure are such, that it can be readily seen from any point of the room occupied by the class.

XVI. TIME DEVOTED TO LECTURES.

1. The regular courses of Practical Instructions in Obstetric Medicine, commence on the **14th** of **February**—**6th** of **May**—**5th** of **September**—and **24th** of **November**,* of each year, *provided*, that when these dates fall on Sabbath, the first lecture of the course will be given on the following Monday. Each Course continues about 10 weeks, and includes 60 lessons, not only on the great principles of the Science, but the practical details of the Art of Obstetric Medicine—and these, when the pupil is believed to be prepared, are verified by opportunities of observing cases. The members of each class, formed at the commencement of the Course, have in regular rotation, the patients of the Dispensary, Lying-in-Charity and Nurse Society assigned them for their care and attendance, with the aid of the assistants, if necessary, and under the supervision of the Principal.

2. The term of engagement in the practice in connection with each course of instruction is about three months—and commences on the **16th** of **April, 16th** of **July, 16th** of **October** and **16th** of **January**, of each year.

XVII. FEE.

1. For each pupil, thirty dollars, money current in the banks of Philadelphia, to be paid on entrance to either of the courses of instructions and practice.

2. The payment of fifty-five dollars upon first entrance, secures to the pupil the privilege of attending two consecutive courses of instructions and practice. by which he may become eligible to promotion to the offices of Junior and Senior Assistants, agreeably to Articles VII. and IX. of this announcement.

The pupils attaining to these offices, are exempted from any other payment of fees for their connection with the Institute.

XVIII. SUCCESS OF THE INSTITUTE.

The Obstetric Institute was commenced in June 1837, and since that time the Principal has given four courses each year

* The daily lessons, since 1847, continue to be given at a quarter before 7, and terminate at a quarter before 8, A. M.—and therefore do not interfere with any other public or private courses in the city.

to advanced pupils or recent graduates in Medicine, who had attended under his supervision many hundred Obstetric cases, some of whose histories have been carefully recorded, and in the aggregate supply a considerable amount of material for clinical illustration in the preparatory courses. In his arduous and responsible enterprise of preparing the Medical Student for entering upon the practical duties of the accoucheur, through the portals of Obstetric experience, the Principal has been occasionally cheered by concurrent testimonies of many former pupils, distributed throughout various sections of our extended country, respecting the value of these courses of instruction, as contributing essentially to their success in obtaining practice as Physicians. Young gentlemen who are ambitious to superadd to the knowledge they may acquire from books and their Professors, the practical advantages which may be obtained by a full compliance with *the disciplinary regulations of the Obstetric Institute*, are not only brought more or less before the notice of thirty-six gentlemen, twelve of whom are Managers of the Philadelphia Dispensary: twenty-four Officers and Directors of the Philadelphia Lying-in-Charity: and twenty-eight Ladies, Visiting Managers of the Nurse Society, who give personal attention to a large number of patients deriving the benefits of the Institute, but by the exercise of their daily duties towards the patients under their care, and their almost constant relation with intelligent Nurses, selected by, and in the employment of the Society of Ladies, they are in a marked degree prepared to perform the functions of Physicians, in the neighborhoods in which they settle for practice, with a business-like manner which inspires the confidence of their patients in their professional abilities.

As this plan hereinafter described, contemplates a succession of elevations in office from that of Pupil up to Senior Assistant Obstetric Physician in this Institute, the wish is hereby expressed, and the hope entertained by the Principal, that in the event of his death or resignation, the Boards of Managers of the several co-operative Institutions, which have through the intervention of the present Principal been concentrated upon this school, will elect a successor from amongst those who shall have attained to the stations of Senior Assistant,—and that this election shall proceed upon the same ground as that adopted in relation to Junior and Senior Assistants.

OBSTETRIC SOCIETY

In 1843 several members of the class organized themselves into an Association, for mutual improvement in Obstetric Medicine. They constituted the Principal their President, with

whom the Constitution and By-Laws are deposited. A number of interesting and instructive communications have been read at its meetings.

The plan of the Society is, that it consists of President, Secretary, Resident Members, Corresponding or Non-resident Members, Fellows and Honorary Members.

Gentlemen desirous of connecting themselves with the Obstetric Institute, can apply to Dr. Warrington, at his residence, No. 229 Vine Street, Franklin Square, from 2 to 3, or 6 to 7, P. M.

Note.—It is desirable, that the four classes in the year should be as nearly equal in size as possible, since there is nearly the same amount of Clinical practice for each class. It is also desirable, that each class should be in even numbers, since the models and apparatus for practical instruction in the lecture-room are so arranged, as that the members of each class work best in pairs.

It is suggested, that the courses which commence in September and November, are best adapted to the wants of those who resort to Philadelphia principally for Clinical experience, while those of February and May are especially convenient for such gentlemen as have leisure to devote to practical Obstetrics, only in the intervals of the first and second courses of instruction in the degree-conferring schools.

Note.—Dr. Elwood Wilson, 505 Mulberry Street, continues to hold the office of Senior Assistant, a post at which he has arrived through the medium described in the preceding pages of this announcement.

Note.—Since the establishment of this Institute two thousand and one hundred patients have been assigned to the attentions of more than three hundred young gentlemen, who had complied with the disciplinary regulations which govern it. The number of cases has been rapidly increasing during the several years last past; and as the Obstetric department of the Dispensary is coextensive with that of the Lying-in Charity and Nurse Society, extending at present to the supply of applicants for its aid from all the populous portions of Philadelphia and its districts, the limitation of the size of the classes will be withdrawn in proportion to the extension of the operations of the concern.

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WQ W295o 1860

Condition when received: The full leather binding was in fair condition. Leather was broken at outer hinges. Spine leather was powdery. Front and back covers were still attached by bands and paper hinges. The front paste down and front fly page were worm eaten at bottom corners. Mold activity is inactive.

Conservation Treatment: Spine leather was strengthened using 2% hydroxypropylcellulose (Klucel G, BookMakers) in ethanol (Nasco) brush-applied. The front paste down and fly were mended using kizukishi and tengujo papers (all papers from Japaneses Paper Place) and secured with zin shofu wheat starch paste (BookMakers). Front and back covers were reinforced at the outer hinges using acrylic-toned sekishu paper using roughly 1:1:1 combination of wheat starch paste (above) : methylcellulose (A4M, Talus) : Jade 403M (University Products). Inner hinges were reinforced suing untoned kizukishi with zin shofu adhesive (above).
Conservation carried out by Rachel-Ray Cleveland
NLM Paper Conservator 11 / 2006

Warrington, Joseph, *Obstetrics catechism*, HMD B1uncat 2001-165
Cleaning: The outer cover and top edge were surface cleaned with a soft brush. The covers were cleaned using grated vinyl eraser (Staedtler). Mold on front and back ten pages was deactivated using ethyl alcohol (Fischer Scientific).
Treatment carried out by Rachel-Ray Cleveland, HMD Paper Conservator, 11/2001.